EFFICACY AND SAFETY OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS DURING AND AFTER CAESAREAN SECTION.

A Dissertation Submitted to

THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY

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for the Award of the Degree of

M.S. (OBSTETRICS & GYNAECOLOGY) - BRANCH – II

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CERTIFICATE

This is to certify that dissertation entitled **EFFICACY AND SAFETY OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS DURING AND AFTER CAESAREAN SECTION** is a bonafide work done by **Dr. S. Kalpana** at R.S.R.M Lying in Hospital, Stanley Medical College,Chennai. This dissertation is submitted to Tamil Nadu Dr. M.G.R. Medical University in partial fulfilment of university rules and regulations for the award of M.S. Degree in Obstetrics and Gynaecology.

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DECLARATION

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INTRODUCTION

Caesarean section was introduced in clinical practice as a lifesaving procedure both for the mother and the baby. Caesarean section rates have increased to as high as 25 – 30% in many areas of the world[1].

Delivery by caesarean section causes more complications than normal vaginal delivery. One of the most common complications is primary and secondary postpartum hemorrhage[2]. Obstetric haemorrhage can be life threatening. Major haemorrhage continues to be one of the most common causes(25%) of direct maternal death[3]. Confidential enquiry in to maternal death 2000-2002 in UK reveals that 17% deaths were due to haemorrhage. In order to reduce mortality and morbidity due to obstetric haemorrhage we need to reduce the amount of bleeding at caesarean section[1].

Blood loss in caesarean section frequently leads to transfusion of allogenic blood products. (Alexander et al 2009) reported that 2.3% were given blood transfusions for hypovolemia in caesarean section and this is related to increased maternal morbidity and mortality [4]. Each unit of transfusion of blood or blood products exposes the patient potentially

to the risk of transfusion related adverse effects such as febrile non haemolytic reactions, blood borne infections and errors in transfusion.

Blood is a scare resource, even when it is available the safety of blood transfusion and shortages of blood products, and rising costs of blood bank operations have generated interest in reduction of blood transfusion during and after surgery. A popular approach is to reduce perioperative blood loss through the prophylactic use of anti fibrinolytic agents. Aprotinin, tranexamic acid and epsilon amino caproic acid are the three anti fibrinolytics[5].

Tranexamic acid is a synthetic derivative of lysine. The anti fibrinolytic activity of tranexamic acid is a result of interference with plasminogen binding to fibrin. It reversibly blocks the lysine binding sites on plasminogen molecules[6]. Intravenous administration of tranexamic acid had been used for many years for reducing blood loss in surgeries like cardio pulmonary bypass, orthoptic liver transplantation,transurethral prostatic surgery, total hip or knee arthroplasty, urinary tract surgery. Tranexamic acid has been shown to be very useful in decreasing blood loss and the incidence of blood transfusion in these surgeries.

The changes in the fibrinolytic components during and immediately after placental delivery are consistent with increased fibrinolysis and the plasma fibrinogen level decreases during 3rd stage of labour and afterplacental delivery[19]. Hence anti fibrinolytics will be useful and effective in reducing blood loss by interfering with the fibrinolytic mechanism. In this study the efficacy and safety of tranexamic acid in reducing blood loss during and after LSCS was investigated.

AIM OF THE STUDY

1. To evaluate the efficacy and safety of preoperative intravenous tranexamic acid in reducing blood loss during and after caesarean section.
2. To compare it with the amount of blood loss in patients who did not receive tranexamic acid preoperatively.

REVIEW OF LITERATURE

Caesarean delivery is defined as delivery of the baby through an incision in the abdominal wall and uterine wall.

Caesarean section rates have increased over the last 20 years around the world including in India. Collaborative study done by Indian council of Medical research showed that the overall caesarean section increased from 21.8% in 1993-1994 to 25.4% in 1998-1999 (Kambo et al 2000)[1].

Caesarean section rate was almost 40 to 45% in the private sector (Srividhya et al and SathyaSekaranet al2003)[8]. A similar study by Pai et al 1999showed almost one in two women had a caesarean section in affluent societies of India[9].

The increase in average maternal age, and increased use of electronic foetal monitoring and widespread use of labour induction, and reduced incidence of instrumental deliveries, increased prevalence of obesity, reduced incidence of vaginal birth after caesarean (Hamilton et at 2009) and increasing rate of elective caesarean for medically indicated preterm birth and patient request(Ananth et al 2005,Nygaard etal2003) are some of the reasons for increasing caesarean rate.

Although caesarean sections are lifesaving procedures that are common in obstetric practice it has its own complication.

Haemorrhage is the most common complication following caesarean section, the excess blood loss in caesarean section is due to bleeding from the placental site and also from the uterine incision. The incidence of post partum haemorrhage was doubled in caesarean section(6to8%) when compared (3.9%) to vaginal deliveries[10,11].(combs et al 1991), (Naef et al 1994).

The maternal mortality and morbidity increased two to nine fold with caesarean delivery compared with vaginal delivery[12] (Villar et al 2007). Haemorrhage is one of the principal sources of maternal mortality and morbidity in caesarean section[13](Burrows et al 2004).

Blood loss during caesarean section

Blood loss during normal vaginal delivery may be up to 500 ml. The average blood loss during caesarean section is1000 ml and 1000 to 1500 ml in caesarean hysterectomy, and in emergency caesarean hysterectomy is 3000ml[14]Pritchard et al 1962).

However blood loss of even 200 ml can be life threatening in woman with severe anaemia (Kongnuy et al).

Physiological adaptations during normal pregnancy:

There is about 40 – 45% increase in plasma volume from 2600ml to3850ml and 25% increase in red blood cell volume from1400ml to 1640ml after 32 – 34 weeks of pregnancy[15] (Pritchard et al 1965). This protective haemodilution initiates fall in haemoglobin, haematocrit, and red cell mass but maintains the mean corpuscular haemoglobin concentration. Blood volume rises by 37% from 4000ml to 5500ml providing not only adequate perfusion and also compensatoryre serve so that a healthy woman can tolerate acute blood loss upto 1000ml.

The haemostatic mechanism in normal pregnancy is characterized by increased level of procoagulant factors like factor VII, VIII, X and fibrinogen and marked decrease in fibrinolytic activity. Parturition makes a serious threat to vascular compartment, but the contractility of the myometrium the " living ligatures" of the uterus is the mechanism which mainly controls the blood loss during labour and caesarean section. Though the myometrial contraction is the prime factor which controls the blood loss during delivery followed by the formation of clot and deposition of fibrin that occur rapidly are essential in maintaining haemostasis(SleepJ et al1993).

Blood coagulation and fibrinolytic system

Coagulation cascade constitutes the third component of the haemostatic process, the first and second is being the endothelial response to tissue injury, and platelet aggregation and deposition respectively[16] (Hoffman et al 2001).

The cascade consists of series of enzymatic reactions leading to cleavage of prothrombin to thrombin. Thrombin converts soluble plasma protein fibrinogen into fibrin monomer which then polymerises into insoluble fibrin. Factor XIII an enzyme is also activated by thrombin which catalyzes the formation of covalent bonds between fibrin molecules and form a clot that is resistant to dissolution[17]. (Anderson et al 1965).

The fibrinolytic system gets activated by deposition of fibrin and it maintains the patency in damaged blood vessels. Fibrinolysis is mediated by plasmin which is derived from break down of inactive circulating precursor plasminogen.

Plasminogen binds to lysine residues on the surface of fibrin and is converted to plasmin by tissue plasminogen activator (t-PA) which is released from the endothelial cells. Plasmin interferes with fibrin polymerization and a break down it's into fibrin degradation products.

Excessive fibrinolysis is prevented by naturally occurring protease inhibitor called alpha 2anti plasmin.

The balance between the coagulation and fibrinolytic mechanism keeps the vascular compartment intact and patent. Fibrinolytic activity is known to be decreased in late pregnancy and labour and return to normal in early pureperium[18](Biezinski JJ et al 1958).

Definition of PPH:

There is no single satisfactory definition proposed

- WHO defines PPH as blood loss > 500 ml in the first 24 hours after delivery and more than 1000 ml of blood is lost in severe PPH (Mousa and Al firevic et al 2007)
- ACOG (2006)– defines as blood loss which decreases haematocrit by 10% or needs transfusion
- Clinically, amount of blood loss results in haemodynamic instability. Because of wide range of definition applied to maternal haemorrhage and their imitations, it is important to combine the clinical presentation and objective data

Incidence of PPH

2 to 11% when blood loss is estimated visually (Brent et al., 1967) and 20% when quantitative methods are used (Newton et al., 1969)

Classification of PPH

Primary PPH: PPH which occurs within first 24 hours postpartum.

Secondary PPH: PPH occurs between 24hrs postpartum and 6 weeks after delivery (Kominiarek et al and Kilpatrick et al 2007)

Potential causes of increased blood loss during caesarean section

Factors are divided into four major groups:

- Tone
- Tissue
- Trauma
- Thrombin

Tone: 80 to 90% cause for PPH

The following are the predisposing factors.

- Over distended uterus – Polyhydramnios, multiple pregnancy, Marosomia
- Multi parity
- Precipitate labour
- Prolonged labour
- Prolonged rupture of membranes
- Chorioamnionitis
- Fibroid complicating pregnancy
- Placenta Previa
- Abruptio Placenta
- Uterine anomalies
- Prolonged Induction of labour
- Inadverent use of oxytocics
- Drugs: halogenated anaesthetics

  Magnesium Sulfate

  Nifidipine

  Beta agonists

Trauma: 20% second most common cause

Factors responsible for increased blood loss in caesarean section are,

- Pfannensteil incision
- Classical caesarean section

- ❖ Malposition of foetal head
- ❖ Transverse lie
- ❖ Obstructed labour with deeply engaged head
- ❖ Large baby
- ❖ Poor obstetrician skill

Tissue: 10%

- ❖ Retained cotelydon, succenturiate lobe
- ❖ Retained products of conception
- ❖ Placental abnormalities like placenta accreta, increta, percreta
- ❖ Retained blood clots

Thromboticdefect: 5%

- ❖ Preexisting coagulapathies like hemophibia A, Von willebrand's disease, ITP
- ❖ Acquired coagulation defects causing DIC like

  HELLP syndrome

  Abruptio placenta

  Intra uterine foetal death

  Septicemia

However half of the woman who had atonic PPH after a primary caesarean section the risk factorswas not identified (Rouse et al 2006).

Consequences of uncontrolled Haemorrhage include:

- Hypovolemic shock leads to organ failure including renal failure myocardial infarction, stroke.
- Severe intra partum or postpartum haemorrhage during and after caesarean section may leadsto rare complication hypoperfusion of pituitary and necrosiscalled Sheehan syndrome. It is characterized by failure of lactation, amenorrhoea, breast atrophy, adrenal cortical insufficiency.
- Massive blood loss may leads to irreversible shock and death.

Complications of Fluid Resuscitation:

- Fluid overload following acute haemorrhage in caesarean section may leads to pulmonary oedema and oedema in the extremities. The former should be suspected in case of massive fluid and (or) blood product resuscitation.
- Dilutional coagulopathy may occur in large volume crystalloid and packed red cell transfusion. Since they neither contain coagulation factors nor platelets.

Complications of blood transfusion:

Allergic (or) Non haemolytic febrile reactions are the commonest with an incidence of 1 in 330 populations

Anaphylactic reactions occur in 1 in 20,000 to 47,000 blood transfusions

Transfusion – related acute lung injury(TRALI):

It occurs in 1 in 5000 transfusions. It develops within 6 hours of transfusion[23] (Silliman et al 2003). Sometimes delayed type TRALI occurs in 6 to 72 hours following transfusion[24] (Marick & Corwin et al 2008).

It is due to interaction of recipients with pre-existing donar leucocyte antibodies caused by transfusion of plasma containing blood products.(kapko 2000 et al). This is a life threatening complication characterized by hypoxia, dyspnoea, and non cardiogenic pulmonary edema.

Acute Immune haemolytic reaction:

Transfusion of an incompatible blood component may result in haemolysis. Patient may present with fever, tachycardia, hypotension, chestpain, flushing. An anxiety and death may results if the transfusion

is not stopped. It is a medical emergency, and the management of the reaction precedes investigation into its cause.

Delayed Reaction:

This subset of reaction results from incompatibility with minor blood group antigens other than ABO blood group. This may manifest between 7 and 21 days. Patient may be asymptomatic with reduced haematocrit, mild jaundice, and positive for direct anti globulin test.

Transfusion related infections:

Donor blood is routinely screened for hepatitis B, C, HIV &II, Malaria andsyphilis. Despite screening the risk of transfusion still occurs since the donor may have been in the window period without a detectable immunologic response at the time of donation.

Highest rate of transmission is with hepatitis B 1 in1,00,000[25] (Jackson et al 2003).(Centers for Disease control and prevention 1995) The risk of Transmission of HIV 1&2 is about 1 in 2 million cases. The risk of Hepatitis C is about 1 in 2 million cases.(Stramer et al2004).Lyme disease, Toxoplasmosis, chagas disease, cytomegalovirus, babesiosis are other rare transfusion related infections.

Metabolic complications:

Patient is at risk of metabolic complications like hypothermia, hypocalcemia, and hyperkalemia.

Hypothemia: May results from transfusion of un warmed blood products results from this toxicity.

Hypocalcemia: This occurs with large volume of transfusion caused by citrate an additive product that binds with serum calcium.

Hyperkalemia: Transfusion of older red blood cells increases the risk of hyperkalemia. Administering tranexamic acid would reduce both units of blood required and reduce the probability of acquiring infection like HIV, HBV, and HCV through transfusion.

Risk associated with surgical intervention:

Intubation and anaesthesia related complications: increased risk of aspiration, failed intubation, and death from failed ventilation are more common in pregnant woman compared with non pregnant woman. Respiratory tract injury, myocardial infarction, arrhythmias, and allergic reactions to anaesthetic medications are other rare complications.

Bleeding: continued bleeding from the genital tract or excessive bleeding may result from a surgical complication.

Infection: prolonged surgery may results from wound infection, pneumonia, and sepsis.

Deep vein thrombosis and pulmonary embolism: The risk is increased due to pregnancyinduced hypercoagulable state, and associated postoperative hypercoagulability and also relative immobility in the post-operative period may predisposeto this complication.

BLOOD LOSS ASSESMENT

Accurate measurement of amount of blood lost after child birth help us to quickly diagnose the life threatening haemorrhage. Caesarean section is particularly associated with varying degrees of blood loss[28] (Sulle et al 2005). The blood loss assessment has to be standardised in order to assess the efficacy of the drug.

Different methods have been used to measure the blood loss

- Clinical methods:
  a) By subjective characters
  b) Visual assessment
- Direct methods:
- Laboratory based measurement
- Others

Clinical Methods:

Estimation of blood loss by using subjective characters.

* Shock Index:

$$SI = \frac{\text{Heart rate}}{\text{Systolic BP}}$$

Normal range: 0.5 – 0.7

If increases to 0.9 – 1.1 with significant Haemorrhage.

Rule of 30:

* If systolic BP falls by 30mmHg
* Heart rate rises by 30bpm.
* Respiratory rate rises by 30 breaths per minute
* Haematocrit drops by 30%
* Urine output <30ml per hour.

If all the above parameters exist the patient must have lost30% of blood volume.

Assessment based on severity of haemorrhage[27]:

(Gutierrez et al 2004) classifies into 4 classes:

Class I:

* Mild bleeding

- Patients have lost <750 ml of blood or <15% of blood volume.
- No change in vital signs, postural hypotension, urinary output.

Class II:

- Moderate bleeding
- 15 to 30% of blood volume loss or 750 – 1500 ml blood loss
- Exhibit baseline tachycardia, and anxiety
- Postural variation in pulse rate about 10-20bpm, increase of pulse rate from supine to upright position
- More than 10mm Hg drop in diastolic blood pressure

Class III:

- 30-40% of blood volume loss (or) 1500-2000 ml of blood loss will be present.
- Extreme tachycardia, heart rate 120 – 140 per minute
- Mental confusion will be present
- Blood pressure very much decreased
- Very much decreased urine output <15ml

Class IV:

- >40% of blood volume lost or more than 2000 ml of blood will be lost

* Patient will be in shock with feeble pulse and unrecordable blood pressure and Oliguria (or) anuria

Visual estimation:

Most commonly practiced method, major advantage of this method is a real time assessment and enables us to correlate findings, but various studies showed significant differences between clinical estimates and the actual measurement.

(Prasertcharoenusket al2000) The incidence of PPH was underestimated in the visual estimation[28].

(Duthie et al 1991) Showed that there was significant underestimation of blood loss during caesarean section[29]

(Stafford et al) The tendency to underestimate the blood loss was greater with calculated loss of >1000ml.

P.Bore et al 2006

10 x 10 cm swab =60 ml

30 x 30 cm swab = 140ml

45 x 45 cm swab = 350 ml

One kg of soaked swab = 1000ml

50 cm floor spill = 500 ml

75 cm floor spill = 1000 ml

100 cm floor spill = 1500 ml

Direct methods:

Oldest method of determining blood loss. Following methods are mainly used to measure blood loss after normal vaginal delivery.

- Bed pan and standard measuring jar
- Rubberized blood mat
- Kelly's pad
- Calibrated drape method.

Gravimetric method:

It is a direct method of estimating the blood loss which can be used in caesarean section to estimate the blood loss.

- Patient weighing method
- Swab weighing method

Patient weighing method:

Measure the weight of the patient prior to and after surgery. Allowance must be made for infusion, drain, and insensible water loss and tissue removal.

Swab weighing method:

By measuring swabs prior to and after surgery and blood absorbed by the swabs would be the difference.

* 1 gm of weight gain = 1 ml of blood loss.

  (Bonica et el 1951), Harding et al 1984)

  The soaked pads should be weighed immediately after surgery in order to avoid estimation errors due to evaporation. This will minimize the inter observer variation orinconsistency in measurement.

* This is the method which is practically possible and is followed in our study.
* Swab weighing is considered a standard method for comparability because it represents a practically real value which is neither dependent on personal bias nor dependent on hypothetical values[30] (Ashraf aly et al2006).
* (Prasertcharoensuk 2000et al) Swab weighing is a gold standard method against other methods in determination of blood loss during caesarean section.[28]

Laboratory based Measurements

Calorimetric method:

(Roe' et al 1962, Thornton et al 1963 Rustod et al 1963)

The contaminated blood swabs are washed with known volume of tap water and sufficient amount of ammonium hydroxide added as a deformingagent to give a 1 in 1000 dilution. Blood collected in the suction container has to be added to the water and the resultant solution concentration has to be determined.

$$\text{Blood loss in ml} = \frac{\text{Hb \% of washing fluid \& volume of washing fluid}}{\text{Hb\% of patientsblood x dilution factor of patients Hb\%}}$$

Alkalinhematin (or) acid hematin method:

It is a method based on when collected blood is mixed with standardized solution which converts haemoglobin to acid haematin (or) cyanomethemoglobin. This is turn can be measured by a spectrophotometer or calorimeter.

Measurement of blood in the suction container:

Blood in the suction container can be measured. In accuracy due to mixing of amniotic fluid can be reduced by having measuring

cylinder in the suction line and by adding deforming agent to the container.

Electrolyte conductivity method:

(Rubricius et al and Leveen et al 1958) Using automated blood loss meter based on electrolyte conductivity.

Radioactivity method:

(Murray and Dotts et al 1960)Preoperative Intravenous injection of small and known amount of radioisotope should be followed by measuring the radioactivity of blood soaked swabs collected during surgery.

Blood volume Measurements:

* **Dye method:**
* The dye should neither catabolised nor rapidly removed from the circulation
* Evans blue dye can be used for measuring blood volume

Radio Isotope Method:

(Mollison and veall et al., 1955)

Radio isotope like I^{131} labelled albumin (or) Cr_{51}labled RBC can be used before surgery and measuring the post operative radioactivity by Geiger muller counter.

Measures to reduce blood loss in caesarean section:

The blood loss during Caesarean can be minimised by

→Good antenatal care.

→Proper preoperative preparation.

→Efficient intra operative measures

→Good post operative care

Good Antenatal care:

Ideally the women should have regular antenatal visits.

* Correction of antenatal anaemia
* Identification of risk factors like maternal foetal and placental complications.

Preoperative Preparation:

- Blood grouping and Rh typing
- Expecting blood loss in high risk cases, and reservation of adequate blood products preoperatively.
- Correction of coagulation abnormality before surgery in cases of Abruption placenta, IUFD and HELLP syndrome.
- Prophylactic use of antifibrinolytics before surgery.
- Regional anaesthesia is preferred one unless it is contraindicated.

Intra operative measures:

- Joel Cohen (Joel cohen 1977) described a transverse skin incision is placed 3 cm below the line joining the anterior superior iliac spine. The subcutaneous tissue and anterior rectus sheath are divided by blunt finger dissection.

  (Mathai and Hofmeyer 2007) at el, compared to pfannensteil incision the Joelcohen incision is associated with less blood loss[33].
- Lower segment incision is preferred over classical caesarean section[34] (Berghella et al 2005)
- Blunt expansion of uterine incision with fingers.

(Magann et al 2002, Sekhavat et al 2009), observed thatsharp dissection of uterus associated with greater blood loss[35].

* To push the deeply engaged head from below upward by an assistant in obstructive labour.
* Patwarthan's or modified patwarthan technique can be used for delivering baby in obstructed labour.
* As soon as the head is the delivered 10 units of oxytocin should be added to the drip and 10 unitsi.m. should be given. This is an important step that enormously reduces the amount of blood loss.
* Placental cord blood drainage may be used to reduce the blood loss in caesarean section[36] (sharma.JB, et al1995).
* Though the blood loss was reduced by active management in the third stage but the adverse effects like nausea, vomiting are high[37](Prendiville et al ., 2002)
* Delayed cord clamping for 60 seconds has the benefit of reducing blood loss and increasing iron stores and decreasing anaemia. This delay does not adversely affect the foeto maternal outcome[38] (Lasely et al 2005).
* Spontaneous delivery of the placenta associated with less blood loss compared to manual removal in caesarean section[39]. [wilkinson et al, Enkin et al 2000] (Farcesa et al, Raziaetal 2008)

Post operative measures:

* Strict vigil is needed in high risk cases.
* Oxytocics can be continued post operatively in high risk cases expecting post partum haemorrhage.

Management of PPH during caesarean section

[RCOG green top guide lines 2009]

* Call for help
* Asses the general condition of the patient
* Vital parameter should be monitored
* Oxygen 4-6 litres through face mask should be given
* Establish additional intravenous access with a large bore cannula
* Arrange for blood transfusion
* In the mean time, crystalloids and colloids can be given

  Isotonic crystalloids are the preferred solutions over colloids because of the quick distribution into the vascular system and are cheap and do not associated with adverse reactions like anaphylaxis as with colloid.
* Transfuse blood as soon as possible blood should be warmed prior to transfusion.

* If bleeding time, clotting time likely to be prolonged replace it with coagulation factors and platelets.

Medical Management:

Uterotonic agents:

(i) oxytocin

10 units i.m. followed by 20-40 units per litre of RL/NS infusion.

* Oxytocin stimulates the upper segment of the myometrium causing rhythmic contractions which constrict blood vessels there by it reduces blood flow through the uterus[40]. (Blanks AM et al 2003).
* Half life is 3 minutes, only parenteral preparations are available.
* Stimulates uterine contractions and has vasopressive and ant diuretic effects.
* Rapid Intravenous boles dose cause hypotension[41] (Secher et al 1978).
* Large volume of doses can cause water intoxication[42]. (Whalley and pritchared et al 1963)

(ii) Methyl ergometrine:

* 0.25 mg or IV repeat every 5 to 15 minutes as needed

  Max: 5 doses

* Ergot alkaloids cause generalized smooth muscle contraction in which the upper and lower segments contract tonically[43] (De costa et al 2002).
* It can be given intravenously, intra muscularly or orally.
* It raises blood pressure hence contraindicated in preeclampsia and cardiac diseases. Other adverse effects are nausea and vomiting.

(iii) Syntometrine:

Combined oxytoxin (5 units) and ergonavine (0.5 mg)

oxytoxin is preferred over syntometrine in reducing blood loss during third stage of labour[44]. (choy et al 2002)

Prostaglandin:

* 15 methyl prostaglandin alpha (carboprost)
* It enhances uterine contractility and also causes vasoconstriction.
* It can be administered intra myometrially (or) intra muscularly in a dose of 0.25 mg
* Dose can be repeated every 15 minutes for a maximum of 8 doses.

* It controls haemorrhage in 87% of the patients[45] ((Lamont RF et al 2001).
* Side effects:

  Nausea, vomiting, diarrhoea, hypertension,headache, pyrexia

  Absolute contra indication: bronchial asthma, hypersensitivity

Misoprostol

* PGE_1 analogue
* It increases uterine tone there by it reduces bleeding
* Can be administered orally, rectally, vaginally, sublingually.
* FIGO recommends 1000 microgram rectally for post-partum haemorrhage.
* Side effects: shivering, pyrexia and diarrhoea

Recombinant factor VII a:

* Enzyme of serine protease class

  It initiates coagulation in conjunction with tissue factor.(Ahonen et al 2007).

* It form a complex with tissue factor at the site of vascular injury independent of the presence of factor VIII and IX.

* Administration in high doses increases its level above the physiological level and promotes thrombin generation.
* (Franchini et al 2007)

  Factor VII A, will not work without fibrinogen and suboptimal results with thrombocytopenia (<20 $X10^9$ /l)

Antifibrinolytics

Tranexamic acid:

The fibrinolytic system gets activated during 3rd stage of labour. During placental delivery fibrinogen and fibrin are rapidly degraded whereas plasminogen activators and fibrin degradation products increases due to activation of fibrinolytic system. This activation can last up to 6 to 10 hours of postpartum causing more bleeding. Tranexamic acid potentiates clotting system by means of inhibition of fibrinolytic mechanism[70] (okamoto et al 1962).The anti fibrinolytic effect of tranexamic acid could make the drug as effective and safe alternative (or) adjunct to other regimens which are currently practiced during caesarean section. Tranexamic acid also reduces blood loss from the upper placental site and conditions like placenta previa and genital tract injury. The drug may be particularly useful in preventing bleeding

due to factors other than uterine atony where uterotonics will not he effective[21] (Mousa et al 2007).

Tranexamic acid is an inhibitor of fibrinolysis that blocks the lysine binding sites of plasminogen and prevents its binding with fibrin[4](Astedt 1987, Longstaff 1994).

It has been used in many years to reduce blood loss during haemorrhage, and is reported to reduce intra operative and post-operative blood loss[47, 48,49,51,52].

Boylan et al 1999

Karski et al 1995

Katsaros et al 1996

Reid et al 1997

Vacharaskar et al 2002.

Adverse effects are very minimal; occur in 10% of patients usually limited to gastro intestinal tract such as nausea, vomiting, diarrhoea.

Rare complications are hypotension, thrombosis, blurring of vision, renal cortical necrosis.

Retinal artery obstruction[46] (Asted et al 1987)

However(Bekassy et al 1990) tranexamic acid was not associated with any adverse effects.

- Tranexamic acid reduces blood loss from placental delivery to 2 hours post-partum without any side effects or complications[54](Gai M Y et al 2004).
- Tranexamic acid significantly reduces blood loss from end of caesarean section to 2 hrs postpartum without any complication[55](sekhavat L et al 2009).
- Tranexamic acid reduces blood loss during caesarean section and bleeding more than 1000ml. The need for additional uterotonics is also reduced[56]. [Gungoruduk k et al 2001]
- Tranexamic acid can be safely and effectively used in caesarean section without any complication like thrombosis[57]. (shahid A. Khan A. etal 2013)
- The use of tranexamic acid in abruptio placenta reduces blood loss and perinatal morality rate without any haemorrhagic diathesis or thrombosis (Lars et al, Birger Astedt et al 2011)
- Tranexamic acid 10 mg/kg intravenously prior to skin incision with women undergoing LSCS reduces blood loss[46](Astedt 1987).

* Use of tranexamic acid potentially prevented some form of PPH in those with high risk factors for PPH[21]. (Mousa 2007) (Cochrane review on treatment of PPH)
* Tranexamic acid reduces 58% of menstrual blood loss in dysfunctional uterine bleeding due to its effect on the fibrinolytic enzymes in the endometrial cavity[59](Gleeson et al, Fiona Buggy et al 1994].
* Tranexamic acid decreases bleeding, maternal morbidity in on-going PPH (Anne sophie et al,Ducloy et al 2011)
* Prophylactic treatment with tranexamic acid reduces post-operative bleeding after conization[60].(GoranRybo et al, Hans et al 1972)
* Tranexamic acid is cost effective drug and its prophylatic use reduces blood loss and money in total hipreplacement (Johansson 2005).
* Antifibrinolytics tranexamic acid and aprotinin use reduces blood transfusion requirements during Liver transplantation without any increased incidence of thromboembolic effects[61].(I.Q. Molenaar et al, warnaar 2007)
* The use of high dose tranexamic acid loading dose of 4 gm over 1 hour followed by 1gm per hour over 6 hours in post-

partum haemorrhage reduces the amount of blood loss and maternal morbidity with mild and transient side effects[62].(Ducloy et al2011).

CRASH-2 TRIAL

Clinical randomization of an antifibrinolytic in significant Haemorrhage (CRASH -2) showed tranexamic acid reduces the risk of death, and transfusion requirement and bleeding in trauma patients and also it is a cost effective drug[63].

* Tranexamic acid significantly reduces the amount of bleeding during and after caesarean section[64] (Patilpurvi 2007).
* Tranexamic acid reduces blood loss and the need for blood transfusions in cardiac surgery, liver transplantation, and orthopaedic surgery[65] (Dunn 1999) Cochrane review (2009).
* Intra venous administration of Tranexamic acid 10 mg /kg prior to sternotomy reduces post-operative drainage and transfusion requirements in coronary artery bypass surgery[66](MM.Maddali et al2007).
* Tranexamic acid reduces the need for allogenic red blood cell trans fusion in patients undergoing hip replacement (Erik Learney et al, Alain Roy et al).

* WOMAN trial (world maternal anti fibrinolytic trial)[67] : Use of Tranexamic acid for the treatment of postpartum haemorrhage. An international randomised double blind placebo controlled trial. On-going trial results are expected in 2015 February.

  The trial includes 15000 women with clinical diagnosis of post partum haemorrhage.

  All women with clinically diagnosed post partum haemorrhage following caesarean or vaginal delivery are included.

  The fundamental eligibility criterion is the responsible clinician uncertainity as to whether or not to use an anti fibrinolytic agent in a particular woman with post partum haemorrhage.

  After randomization.1 gm of tranexamic acid by intravenous injection or placebo (0.9 sodium chloride) given as seen as possible.

  If bleeding continues after 30 minutes or further episode of bleeding within 24 hrs 2nd dose of drug should be given

TAMPONADE TECHNIQUES

- (Condus GS, Arul Kumaran et al) Sengstaken black more tube can be used both therapeutic and diagnostic purpose.

- (Maier et al 1993. Hsu et al 2003) Uterine tamponade is very useful in controlling bleeding due to uterine atony and placental site bleeding.

Surgical Techniques: Conservative methods

* Placental bed suturing (Arul Kumaran et al 1999)
* Devascularize the post caesarean section uterus with bilateral mass ligation of ascending branches of uterine arteries and veins.(O'Leary et al 1995)
* Stepwise devascularisation (Abdrabbo et al 1994)
* Pair of vertical brace sutures compress the anterior and posterior wall of uterus achieving haemostasis.(B Lynch et al 1997)
* Modified B Lynch (Hayman et al 2002)

  Pair of vertical braces sutures without opening the uterine cavity in addition horizontal cervicoisthumic opposition suture after reflecting the bladder

- Cho's multiple squaring sutures (cho et al 2000)
- Uterine artery embolisation. (Raveena et al 1991)

  It is done in a hemodynamically stable patient with persistent bleeding.

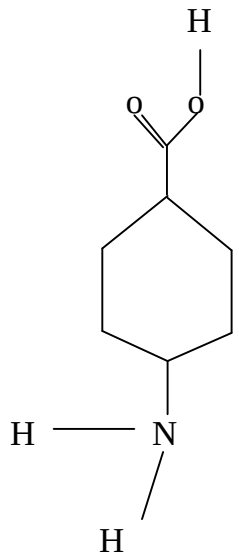
  Success rate 73-100% (Chalers et al 2008)

Hysterectomy

It is done when all the available measures have been tried and failed.

TRANEXAMIC ACID

CHEMICAL STRUCTURE:



Chemical Name : trans -4- (aminomethyl) cyclohexane carboxylic acid.

Molecular Formula : $C_8H_{15}NO_2$

Molecular Weight : 157.21

Melting point : 300°c

PH of aqueous solution : 6.5 to 8.0

Storage at 25°C

Classification : It is an antifibrinolytic drug

It is a synthetic derivative of amino acid lysine and exerts its antifibrinolytic effect through reversible blockade of lysine binding residues on plasminogen molecules.

Pharmaco dynamics:

The dug has two isomeric forms the antifibrinolytic potency resides in the trans isomeric form[79] (okamoto et al1964). The antifibrinolyic effect is mainly results from the formation of reversible complex of the drug with plasminogen. The lysine binding sites of human plasminogen are important sites of interaction for the synthetic antifibrinolytic derivatives, fibrin and alpha -2- antiplasmin[69](thorsen et al 1975).

Tranexamic acid binds with lysine residues of plasminogen molecules and competitively inhibits activation of plasminogen there by reducing conversion of plasminogen to plasmin.

At much higher concentration itnoncompetitively inhibits plasmin. Comparison studies between tranexamic acid and epsilon amino caproic acid showed tranexamic acid is about 10 times more potent than the later.

* Tranexamicacid bind more strongly than amino caproic acid to both strong and weak receptor sites of plasminogen molecules in a ratio corresponding to the difference in potency of these compounds.
* Tranexamic acid in a concentration of 1 mg /ml does not aggregates platelets invitro
* Tranexamic acid has no influence on the platelet count and the coagulation time, (or) various coagulation factors in the whole blood (or) citrated blood innormal subjects up to 10mg/ml concentration in blood. On the other hand when the concentration is> 10mg/ml in blood prolongs the thrombin time[71](Widlund L Stromberg S et al 1970).

Pharmacokinetics:

30-50 % of the orally administered drug is absorbed and its bioavailability is not affected by food intake[72] (Tovi et al 1972).It does not binds with serum albumin.

After intravenous administration of 1gm of drug the plasma concentration time curve shows tri exponential delay with a half life of about 2 hours for the terminal elimination phase.

Distribution:

Volume of distribution of drug is about 9 to 12 litres. The peak plasma level is 8mg/l after 1 gm oral dose and 15 mg/l after 2gm oral dose after 3hours of administration[73](Kullander et al1970).

Anti fibrinolytic concentration of tranexamic acid remains in different tissue for about 17 hours and about 7-8 hours in the serum.

Metabolism

Majority of the administered drug is remain unchanged only a small fraction of drug is metabolised.

About 1% of dicarboxylic acid and 0.5% acetylated compounds are excreted after oral administration.

Excretion:

Renal excretion is the main route of elimination via glomerular filtration. 95% of the dose is remains unchanged and excreted through urine. After intravenous administration 90% of the drug is execreted through urine with 24 hours cumulative urinary execretion is about 39% is 24Hrs[74](Walzman et al 1971).

The drug crosses the placenta. After I.V. Injection of 10mg/kg to a pregnant woman the cord blood concentration is about 30 mg/l.

The drug rapidly diffuses in to joint spaces and synovial fluid. The concentration is almost equal to that of serum the half-life is 3 hours in joint fluid(Bonnar J et al 1971).

In the breast milk the concentration is about one hundredth of peak serum concentration.

The drug crosses blood brain barrier, CSF concentration is about one tenth of plasma.

Very small amount of drug is detected in semen where it inhibits fibrinolytic activity but it does not influence sperm motility.

Uses:

The drug can be used in all types of bleeding especially coagulopathic bleeding. The drug can be used prophylactically before surgery where excess bleeding is expected.

* Caesarean section
* Post partum Haemorrhage
* Bleeding due to coagulation defect
* Cardiac surgery like cardio pulmonary bypass
* Trans urethral resection of prostate
* Liver transplantation surgery

* Orthopaedic surgeries like spine surgery, total knee or hip replacement
* Dental extraction is haemophilia patients
* Non hormonal agent in menorrhagia and dysfunctional uterine bleeding.

Adverse effects:

* G1 disturbance about 10% include nausea, vomiting, diarrhoea.
* Sudden rapid intravenous infusion may cause giddiness and hypotension
* Defective colour vision[76,77](Ekvaran et al 1983),(Thelil PL et al).
* Drug allergy
* Thrombo embolism
* Un usual tiredness and weakness
* Unusual menstrual discomfort
* Watery eyes[78](Robble et al 1995,Lindoff et al).

Contra indications:

* In patients with past H/o thrombo embolism
* In patients with subarachnoid haemorrhage the drug may causecerebral edema and cerebral infarction.
* Patents with defective colour vision

* Renal failure, liver failure, cardiac diseases

Drug interaction:

* Chloropromazine increases cerebral vasospasm when it is combined with tranexamic acid so it should not be combined.
* Concurrent administration of heparin does not interfere with the anti fibrinolytic activity of tranexamicacid[75] (Van riper et al 1993).

Should be cautiously used in

* H/o allergy
* H/o Renal / Liver disorder
* Pregnancy – category 'B' drug can be safely used in lactating mother.1% maternal serum level will be reached in breast milk.

Preparation and dosage:

- Oral -500mg tablets
- Intravenous- available as 5 ml 10 ml ampules 1 ml contain 500mg

Dose: 10 mg / kg either direct slow IV or diluting with 100ml of normal saline at a rate of 1 ml/min followed by 1 mg/kg/hr infusion (or) 10mg /kg thrice daily I.V.

Mouth washes:

The drug available as mouth washes types and can be used in haemophilia patients before and after dental extraction because saliva is rich in plasminogen activator.

MATERIAL AND METHODS

It is a prospective randomized case controlled study commencing from December2012 to November 2013 (1year). 300 pregnant women undergoing LSCS in R.S.R.M lying in hospital were included in this study.

In all the patients detailed medical and obstetric history was taken. Vital parameters like heart rate, respiratory rate and blood pressure were checked. Preoperative basic investigations were done.

General and obstetric examination was done for all patients. Gestational age was confirmed by USG. All 300 patients were allocated into two groups 150 patients in the study group and 150 patients in the control group. All patients were counselled and informed consent obtained.

Study Group:-

- One gram tranexamic acid (10ml) in 100ml NS over 10 minutes 20 minutes before the skin incision.
- Inj. Oxytocin 10 U intramuscularly after the delivery of baby and 10Uadded into intravenous infusion.

Control Group:-

- Placebo injection of 100ml normal saline over 10minutes 20 minutes prior to skin incision.
- Inj.oxytocin 10U intramuscularly after the delivery of baby and 10U added to intravenous infusion.

Inclusion Criteria

Primi and 2nd gravida with term live singleton pregnancy being delivered by LSCS.

Exclusion Criteria

- Multiple pregnancy
- Pre eclampsia
- Macrosomia
- Prev. H/o caesarean delivery
- Polyhydramnios
- Those requiring blood transfusion due to anaemia
- Fibroid complicating pregnancy
- Placental abnormalities like

  Placenta previa

  Abruptio placenta

  Placenta accreta, increta, percreta,

- H/o bleeding disorders
- Persons allergic to tranexaneic acid
- Associated systemic complication involving Heart, Liver and Kidney
- Prev. H/o PPH
- Prolonged and obstructed labour
- Gravidity more than 3.

Methods:-

Study and control group patients received the injection as mentioned above. All the LSCS were done under spinal anaesthesia. The following parameters were monitored in all the cases.

Preoperative pulse rate, blood pressure, respiratory rate was monitored. Haemoglobin and haematocrit was done.

Vital Signe: pulse rate, respiratory rate, blood pressure were checked immediately after placental delivery and 1hour and 2hours after surgery.

- Blood was collected and estimated for two periods following placental delivery to end of surgery and from end of surgery to 2hrd postpartum.
- Uterine contractility.

- Neonatal manifestation.
- Side effects caused by tranexamic acid
- Post-partumHb% haematocrit were checked after 48 hours.
- Maternal blood transfusion, need for the additional uterotonics were noted.

Measurement of blood loss:

- Blood collected separately in the kidney tray and soaked with swabs were weighed from placental delivery to 2hrs post partum.
- Amniotic fluid and bleeding occurred prior to placental delivery was ignored.

$$\text{Total blood loss} = \begin{matrix}\text{Swab weight} \\ \text{After Delivery}\end{matrix} - \begin{matrix}\text{Swab weight} \\ \text{before Delivery}\end{matrix}$$

1gm of swab weight = 1ml of blood (Bonica et al 1951)

After collecting all the data the data were tabulated in a master chart and analysed. The data were analysed by using the statistical package for social science (SPSS) version 11.5. Normality of distributionwas checked as needed. The results were expressed as frequency, mean plus or minus standard deviation and median. Statistical comparison was carried out using chi square test(x2) test,

independent t test, or mann-whitney test, and paired t test where appropriate. Equal variance assumption was assessed by the levene test. Two tailed $P<0.05$ was considered significant.

RESULTS AND ANALYSIS

This is a prospective randomized case controlled study commencing from December 2012 to November 2013. 300 women undergoing LSCS in R.S.R.M. Lying in Hospital Stanley Medical College were included in this study. 150 women comprised study group subject who received tranexamic acid and 150 women comprised control group subject who did not receive tranexamic acid.

TABLE -1

DISTRIBUTION OF CASES ACCORDING TO AGE GROUP

Age in years	Number of cases			
	Study Group		Control Group	
	Number	%	Number	%
< C20	9	6%	9	6%
20 – 24	71	47.3%	82	54.7%
25 – 29	62	41.7%	50	33.3%
>30	8	6%	9	6%

Table – 1 Shows distribution of cases according to age group. Majority of the patients (50%) inboth groups were 20 – 24 years and 6% of the patients belong to < 20 and > 30 yrs.

TABLE – 1

DISTRIBUTION OF CASES ACCORDING TO AGE GROUP

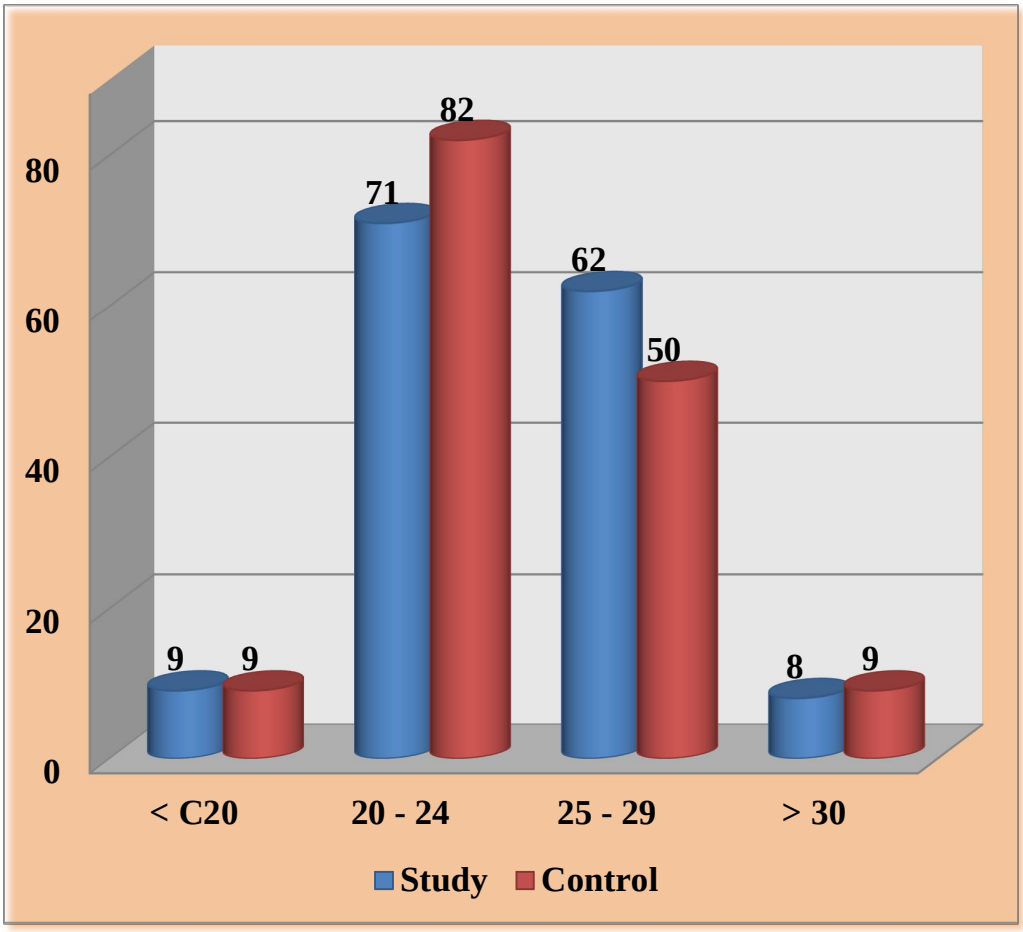


TABLE – 2

OBSTETRIC FORMULAS

Obstetric formula	Number of Cases			
	Study Group		Control Group	
	Number	%	Number	%
Primi	120	80%	110	73%
2nd gravida	30	20%	40	27%

Chi Square (x2) = 1.863 P = 0.172 (NS)

Table – 2 shows distribution of cases according to parity in both groups. There is no statistical significance between these two groups

TABLE – 2

OBSTETRIC FORMULAS

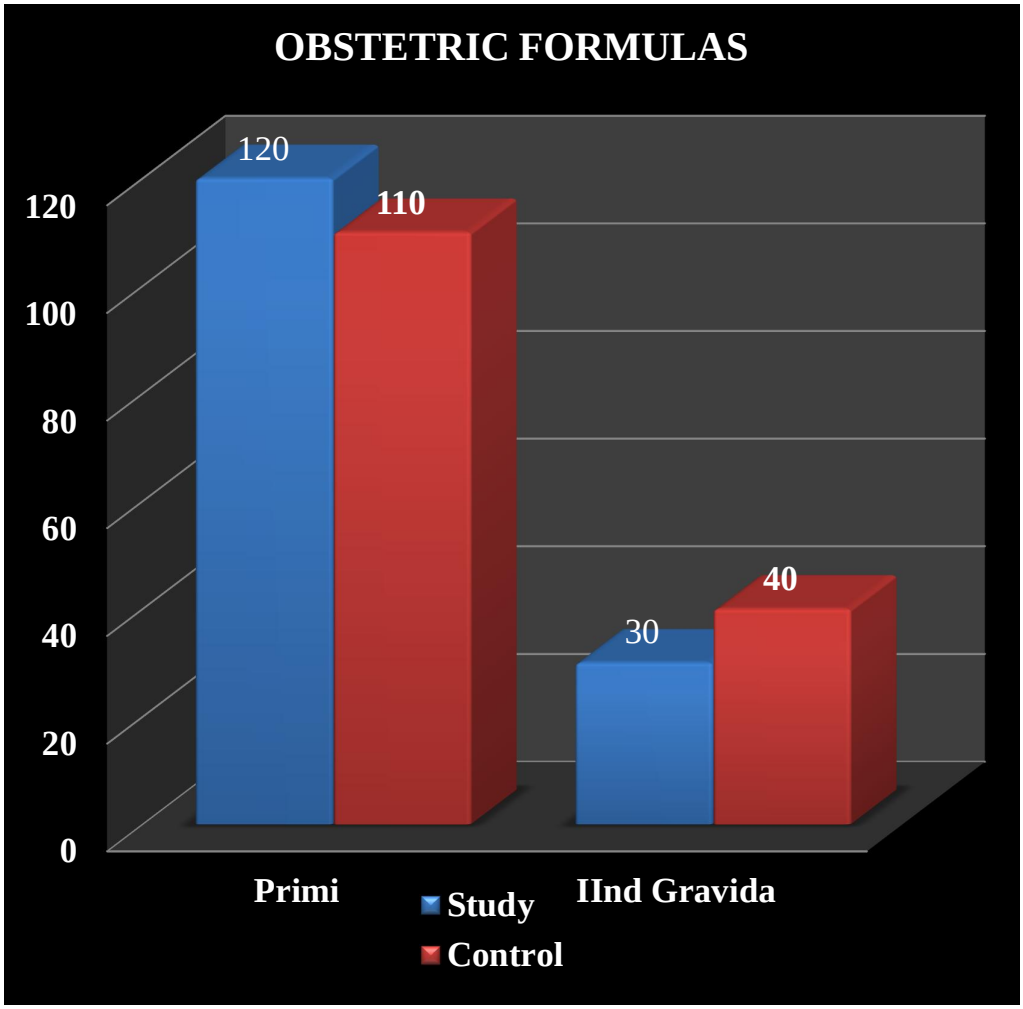


TABLE – 3

DISTRIBUTION BASED ON SUBJECTIVE CHARACTERS

Height & Weight	Study Group		Control Group		P
	Mean	S.D	Mean	S.D	
Weight (Kg)	51.90	1.263	51.95	1.166	0.704 (NS)
Height (cm)	151.89	3.051	152.38	1.230	0.67 (NS)

Table – 3 Shows confounding factors like height and weight are comparable in both groups. Mean weight was 51.90 kg in study group and 51.95 in control group(P=0.704). The difference in weight in both groups was not statistically significant.

Mean height was 151.89 cm is study group compared to 152.38 cm is control group(P=0.67). The difference in height was not statistically significant. Both the groups were comparable.

TABLE-3

DISTRIBUTION BASED ON SUBJECTIVE CHARACTERS

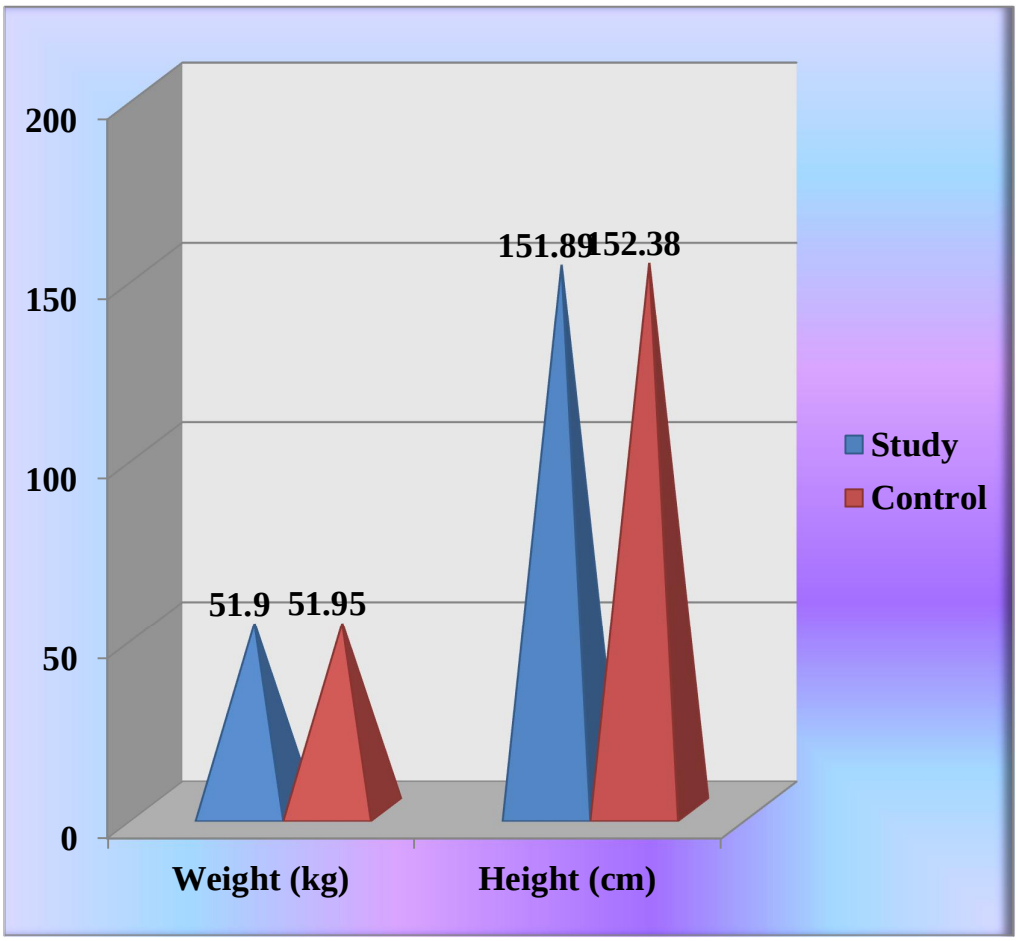


TABLE – 4

DISTRIBUTIONS OF CASES ACCORDING TO INDICATION OF LSCS

Indication of LSCS	Study Group (No. of cases)	Control Group No. of cases
Foetal distress	49	54
Failed Induction	20	15
Cephalic pelvic	38	45
Breech	15	11
Severe oligohydraminos	14	13
PROM with Failure to progress	14	12

Chi – Square (x^2) = 2.354

P value = 0.798 [Statistically not significant]

Table – 3 Shows distribution according to indication of LSCS in both groups. The indication can have an effect on amount of intraoperative blood loss. The indications for LSCS were comparable in both the groups.

TABLE – 4

DISTRIBUTIONS OF CASES ACCORDING TO INDICATION OF LSCS

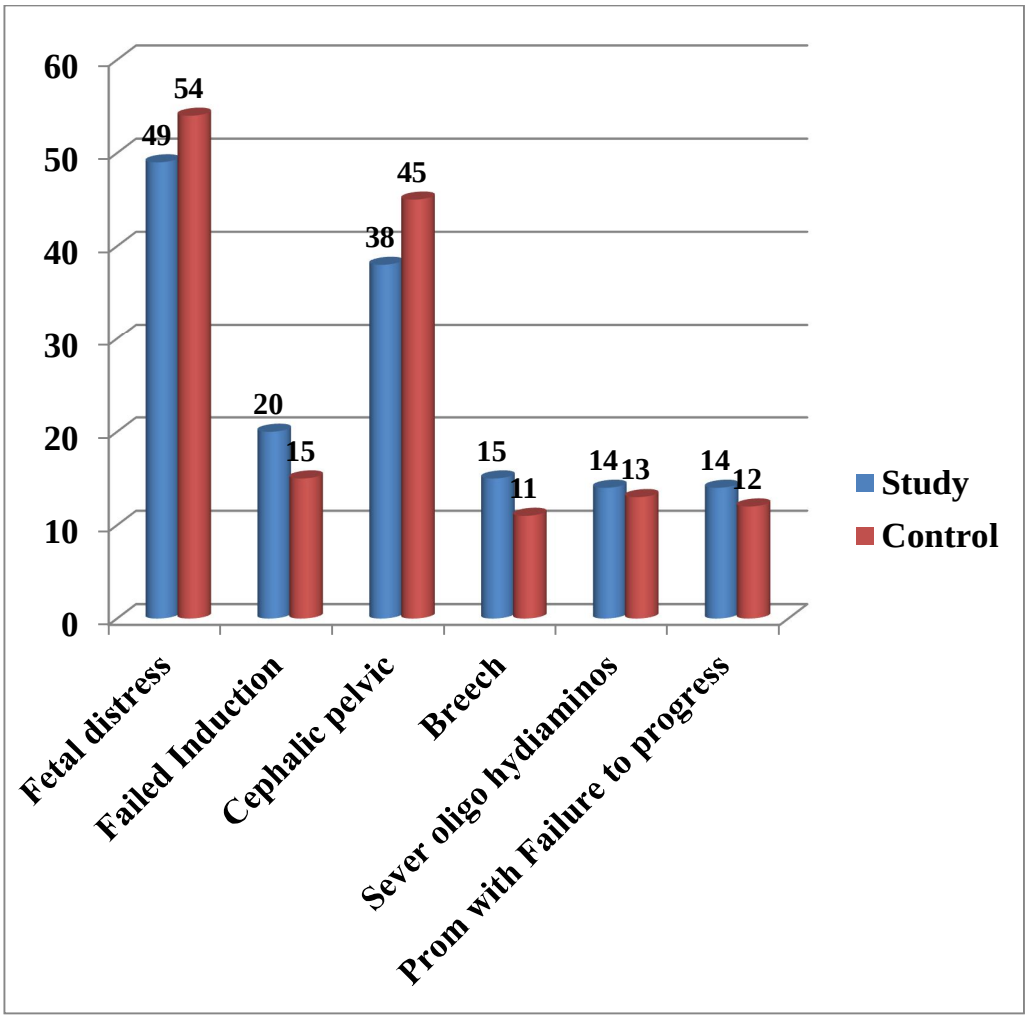


TABLE – 5

VITAL SIGNS BEFORE DELIVERY

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Pulse rate(bpm)	82.14	1.264	82.02	2.005	0.536 (NS)
Respiratory rate (breath/min)	18.25	0.779	18.33	1.059	0.107 INS)
Systolic BP (mm Hg)	119.29	3.592	118.93	3.086	0.362 (NS)
Diastolic BP (mm Hg)	79.03	2.854	78.47	3.714	0.382 (NS)

Table – 5 Shows preoperative vital signs like Pulse rate, systolic and diastolic blood pressure and respiratory rate. There was no statically significant difference between both groups. Preoperative vitals were comparable in both the groups.

TABLE – 5

VITAL SIGNS BEFORE DELIVERY

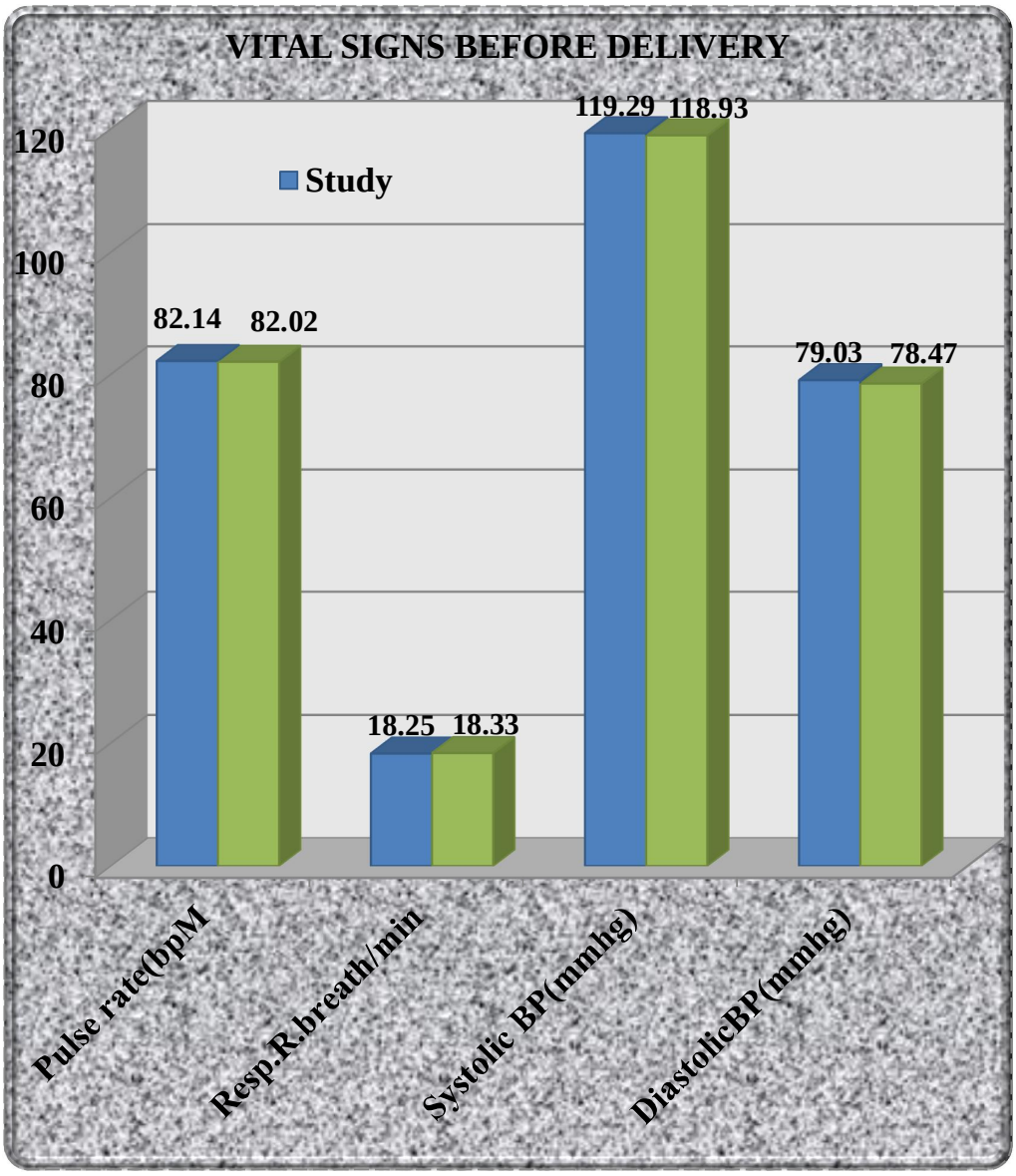


TABLE – 6

EFFECT OF TRANEXAMIC ACID

Comparison of blood loss from the time of placental delivery to End of Surgery

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Mean Blood Loss	305.38	56.2	371.30	104.5	0.001 ** Highly significant

Table – 6 Shows blood loss from placental delivery to end of LSCS. The blood loss was about 305.38 ml in study group and 371.30 ml in control group (P = 0.001) suggesting there was statistically highly significant difference in blood loss between both groups. Those who received Tranexamic acid had 65.92 ml less blood loss than who did not receive the drug.

TABLE –6

EFFECT OF TRANEXAMIC ACID

Comparison of blood loss from the time of placental delivery to End of Surgery

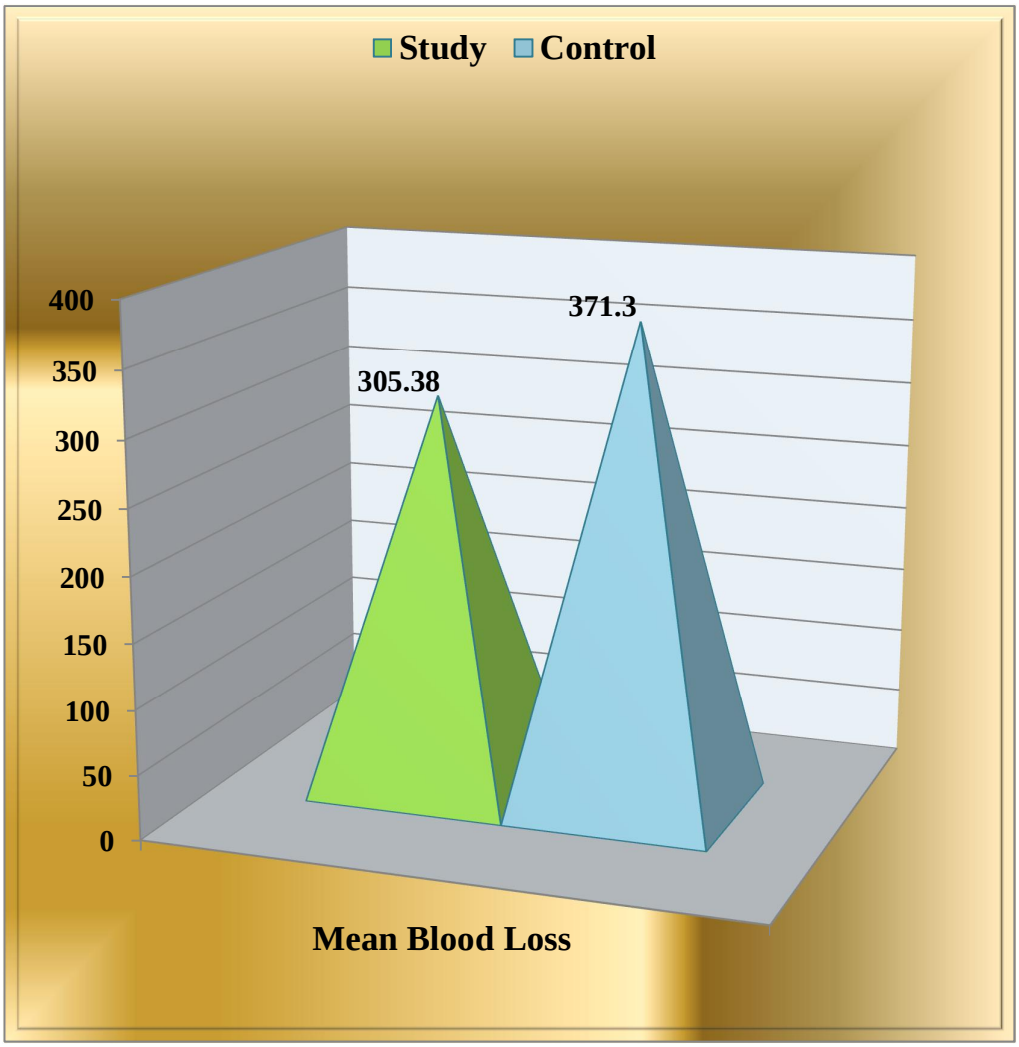


TABLE – 7

EFFECT OF TRANEXAMIC ACID

Comparison of blood loss from end of surgery to 2 hrs postpartum

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Mean Blood Loss	74.28	14.90	114.48	13.9	0.001 ** (HS)

Table – 7 Shows mean blood loss from end of surgery to 2 hours post partum was 74.28 in study group and it was 114.48 ml in control group (P = 0.001) suggesting there was statistically highly significant difference in blood loss in both the groups. Patient who received tranexamic acid had 40.2 ml less blood loss than who did not receive the drug.

TABLE – 7

EFFECT OF TRANEXAMIC ACID

Comparison of blood loss from end of surgery to 2 hrs postpartum

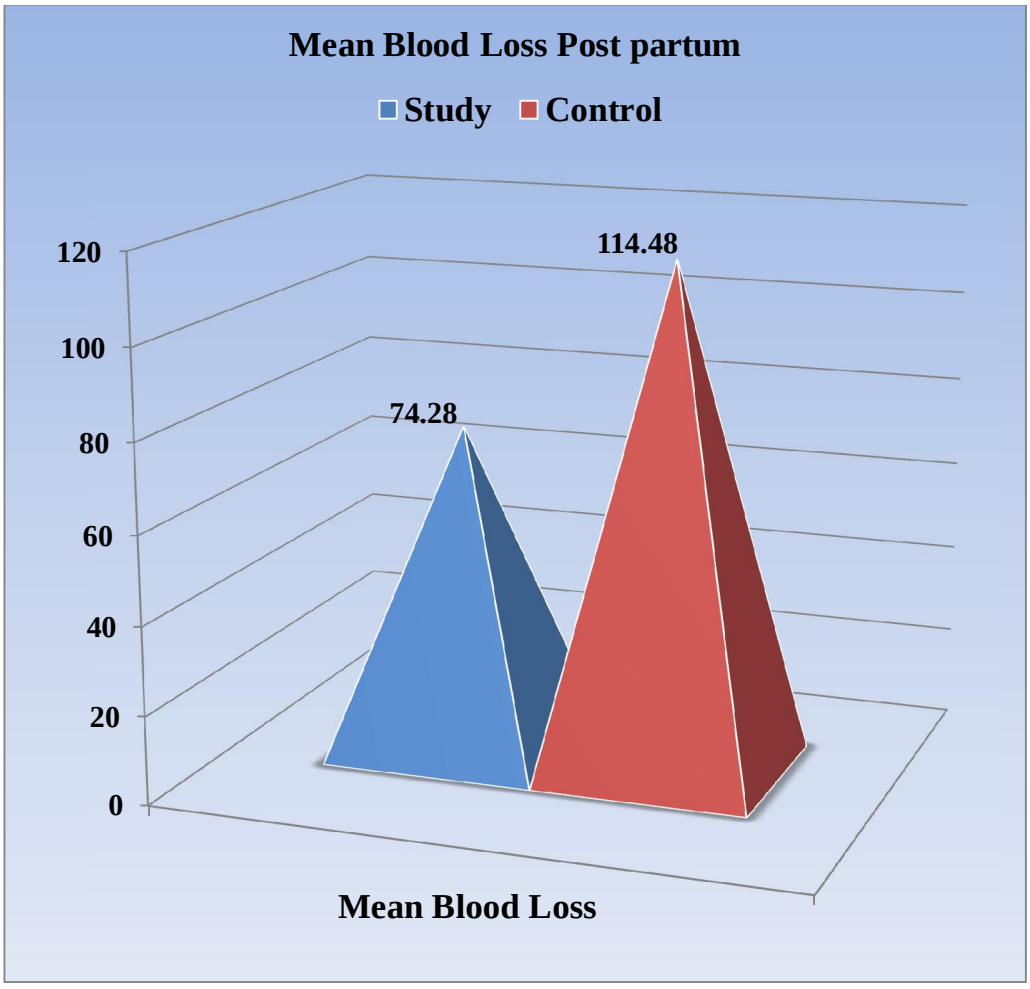


TABLE – 8

EFFECT OF TRANEXAMIC ACID:

Comparison of blood loss from the time of placental delivery to 2 hours postpartum.

	Study		Control		P
	Mean	S.D	Mean	S.D	
Mean Blood Loss (ml)	379.66	70.73	485.45	116.16	0.001** (HS)

Table -8 shows mean blood loss from placental delivery to 2 hours postpartum was 379.66ml in the study group and 485.45 ml in the control group(P =0.001) suggesting there was statistically highly significant difference in blood loss in both the groups. Patient who received the drug had 106.12 ml less blood loss than who did not receive the drug.

TABLE – 8

EFFECT OF TRANEXAMIC ACID: Comparison of blood loss from the time of placental delivery to 2 hrs postpartum.

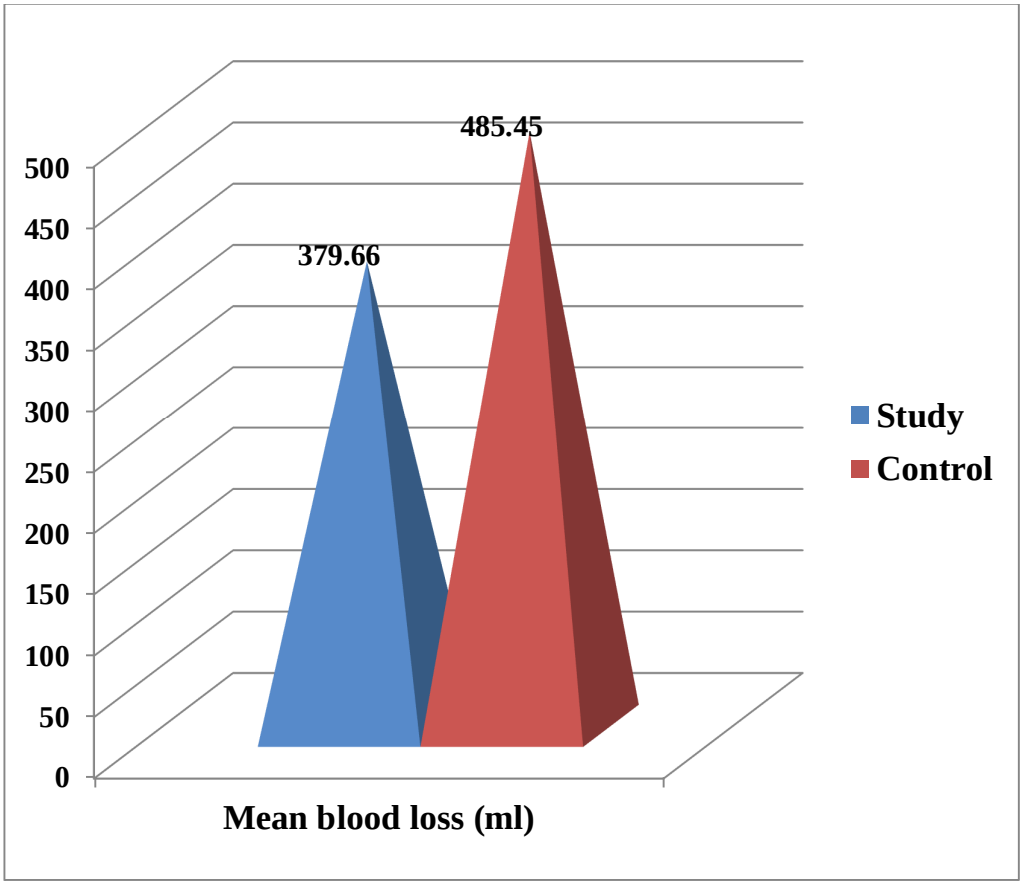


TABLE – 9

EFFECT OF TRANEXAMIC ACID

Comparison of incidence of blood loss >500 ml

	Study		Control		P Value
	No of cases	%	No of cases	%	
Mean BL > 500ml	14	9%	29	19%	0.013
Mean BL < 500 ml	136	91%	121	81%	

Table-9 shows the incidence of blood loss more than 500ml in both the groups. 14women (9%) in the study group had blood loss more than 500ml compared to 29 women (19%) in the control had more than 500ml blood loss P =0.013(S) suggesting statistically significant difference in blood loss in both the groups. Blood loss >500 ml was significantly reduced in tranexamic acid group than who did not received the drug.

TABLE – 9

EFFECT OF TRANEXAMIC ACID

Comparison of incidence of blood loss >500 ml

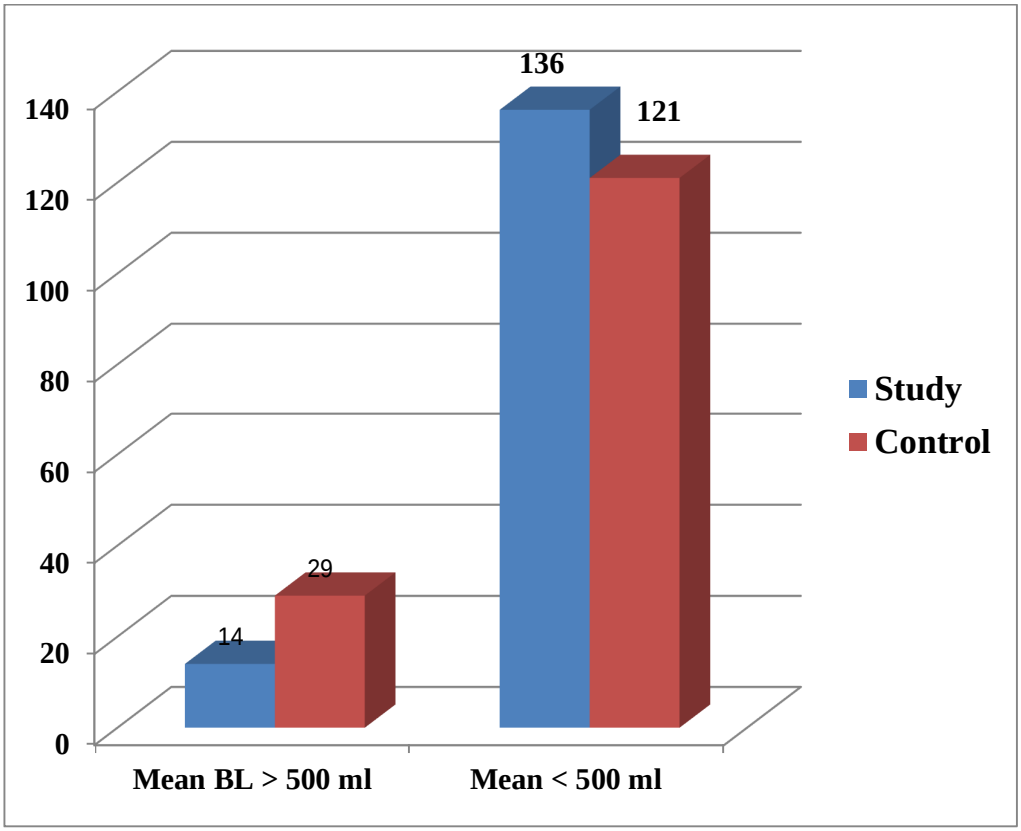


TABLE –10

Comparison of duration of surgery between the two groups

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Duration of LSCS (min)	41.69	1.165	41.90	1.257	0.128 (NS)

Table – 9 Shows mean duration of surgery which was about 41.69 minutes in the study group and 41.90 in the control group(P=0.128). Duration of surgery may influence the intra operative blood loss. There was no statistically significant difference in the duration of surgery between the groups.

TABLE –10

COMPARISON OF DURATION OF SURGERY

BETWEEN THE TWO GROUPS

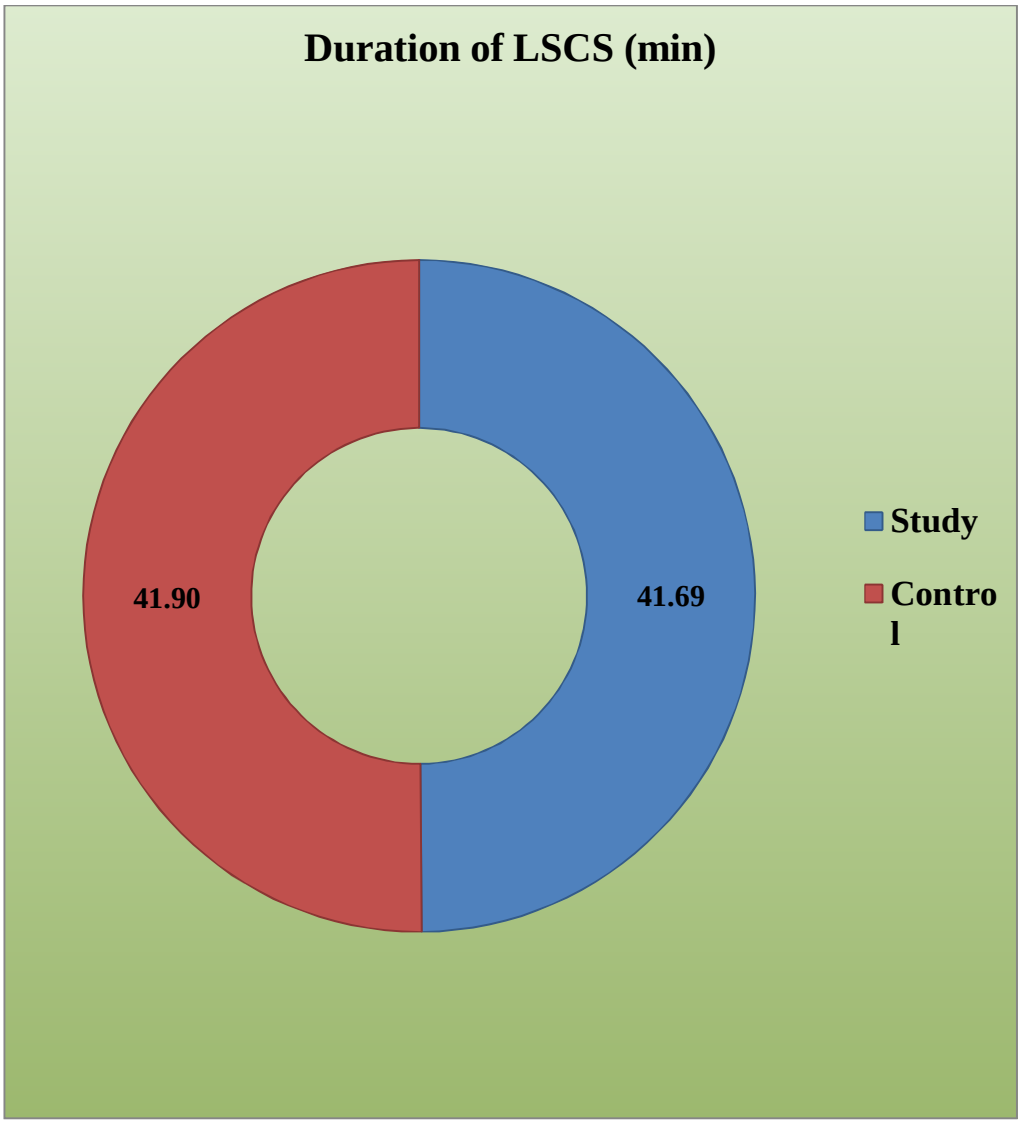


TABLE – 11

Vital signs at the time of placental delivery in both the groups.

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Pulse rate (bpm)	85.19	1.161	85.35	1.622	0.327 (NS)
Respiratory rate (Breath/min)	18.34	0.918	18.45	0.671	0.252 (NS)
Systolic BP (mmHg)	118.59	5.971	118.67	2.376	0.879 (NS)
Diastolic BP (mmHg)	76.30	4.19	75.77	2.94	0.209 (NS)

Table – 11Shows mean pulse rate, respiratory rate, systolic and diastolic blood pressure at the time of placental delivery in both the groups. There was no statistically significant difference in vital signs at the time of placental delivery in both the groups.

TABLE – 11

VITAL SIGNS AT THE TIME OF PLACENTAL DELIVERY IN BOTH THE GROUPS.

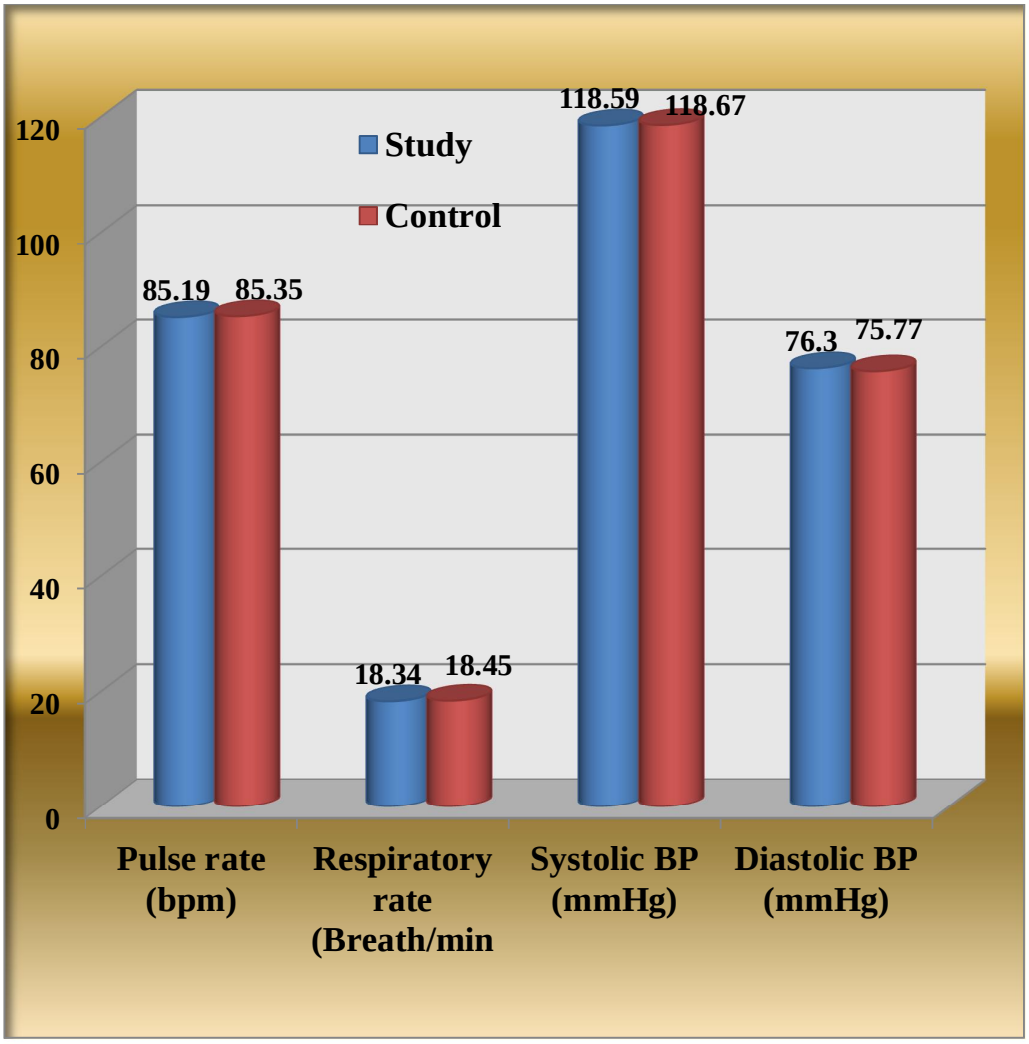


TABLE – 12

VITAL SIGNS 1 HR AFTER SURGERY

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Pulse rate (bpm)	84.09	1.652	83.97	1.114	0.437 (NS)
Respiratory rate (Breath/min)	18.49	0.873	18.43	0.901	0.558 (NS)
Systolic BP (mmHg)	119.56	2.197	119.67	3.116	0.716 (NS)
Diastolic BP (mmHg)	80.77	2.306	80.26	3.780	0.157 (NS)

Table – 11 Shows mean pulse rate, systolic and diastolic blood pressure and respiratory rate 1 hour after surgery in study and control groups. There was no statistically significant difference in the vital signs 1 hour after surgery in both groups.

TABLE – 12

VITAL SIGNS 1 HR AFTER SURGERY

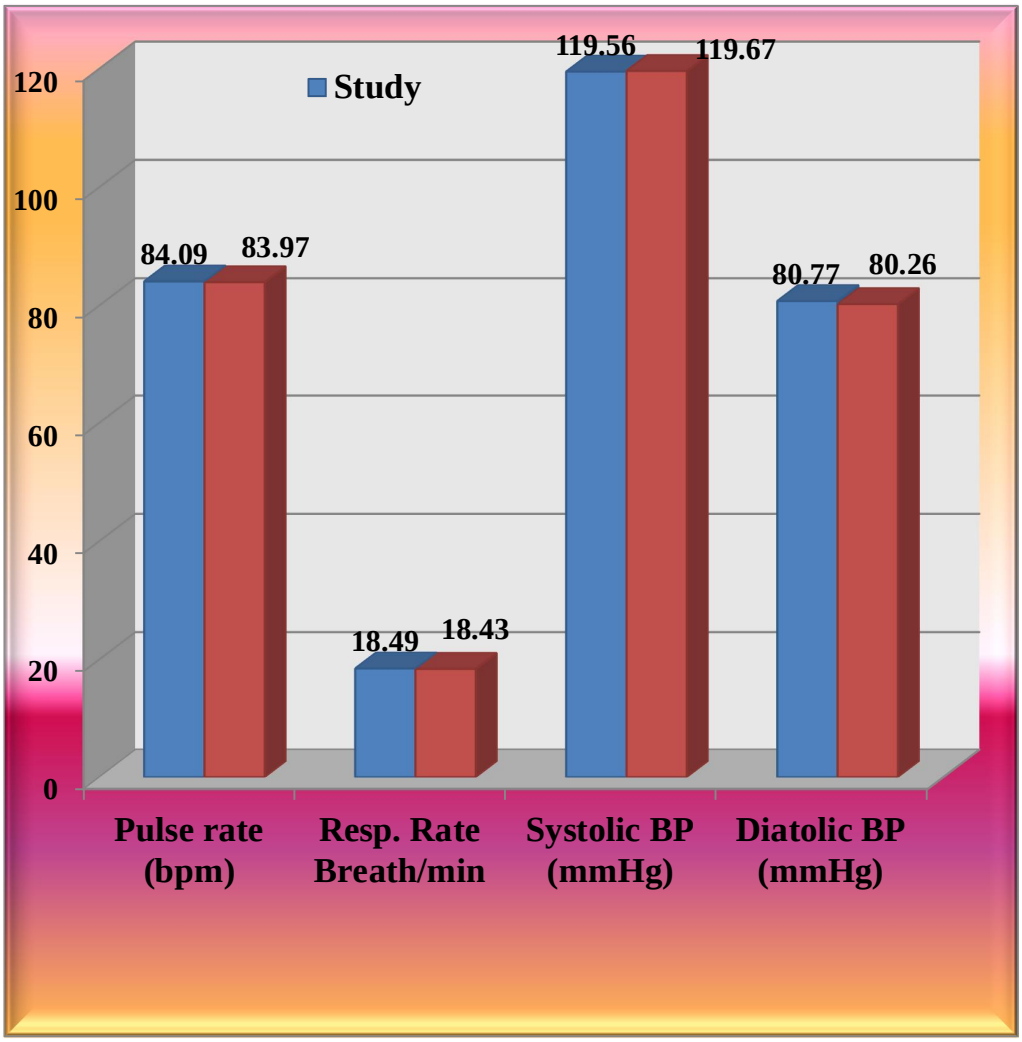


TABLE – 13

VITAL SIGNS 2 HRS AFTER SURGERY

	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Pulse rate (bpm)	81.62	1.899	81.69	1.362	0.727 (NS)
Respiratory rate (Breath/min)	18.40	0.927	18.37	0.879	0.798 (NS)
Systolic BP (mmHg)	120.97	5.559	120.84	4.45	0.819 (NS)
Diastolic BP (mmHg)	80.09	2.560	79.92	3.791	0.643 (NS)

Table – 12 Shows mean pulse rate, respiratory rate, systolic and diastolic blood pressure at 2 hours after surgery in both the groups. There was no statistically significant difference in vital signs at 2 hours after surgery in both the groups.

TABLE – 13

VITAL SIGNS 2 HRS AFTER SURGERY

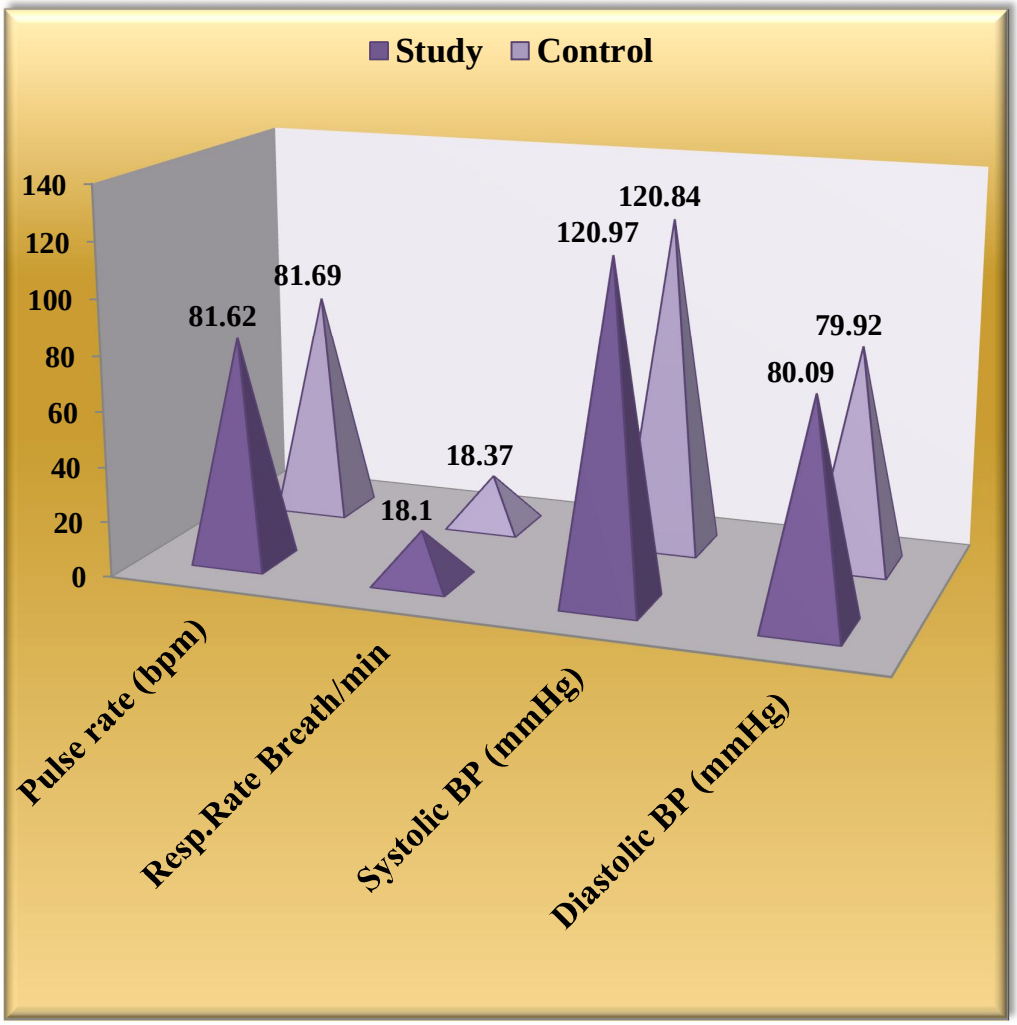


TABLE-14

CHANGE IN BLOOD INDICES

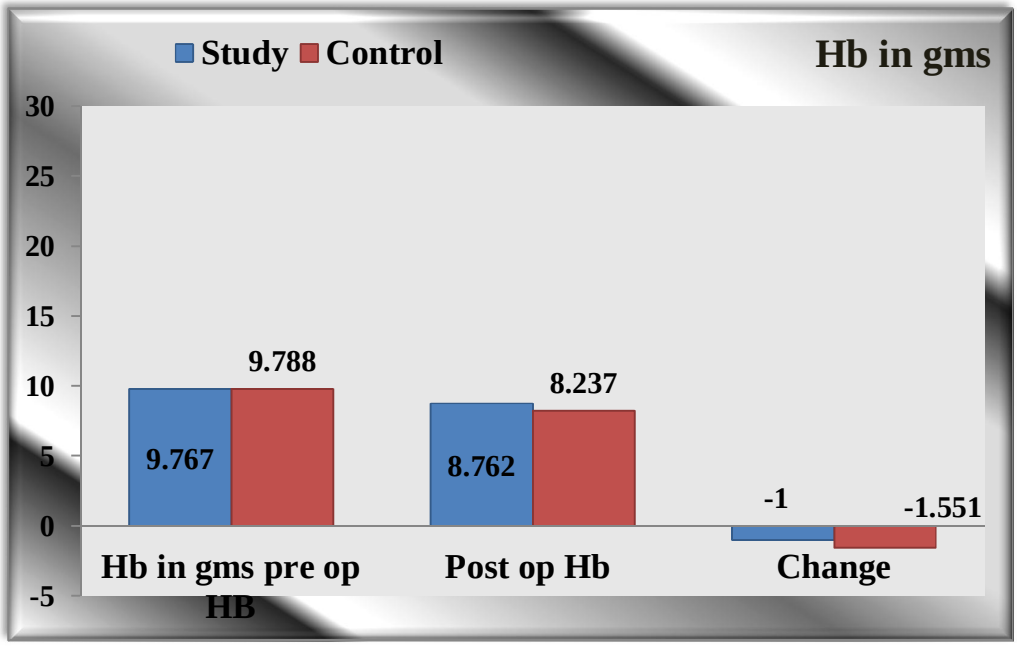
Blood Indices	Study		Control		P Value
	Mean	S.D	Mean	S.D	
Hb in gms Pre op HB Post op HB % Change	9.767 8.762 - 1.00	0.2089 0.2195	9.788 8.237 - 1.551	0.1886 0.215	0.001** (HS)
PCV(%) Pre op PCV Post op PCV change	28.83 27.85 -0.98	0.999 1.006	28.91 26.62 -2.29	0.948 1.235	0.001** (HS

Table – 13 Shows comparison of mean fall of haemoglobin andhaematocrit in both the groups. Mean fall of haemoglobin was 1.00 in the study group and 1.55 in the control group. Mean fall of haematocrit was 0.98 in study group and 2.29 in control group.

Mean fall of postoperative haemoglobin and haematocrit was significantly reduced in study group than control group.(P=0.001) There was statistically highly significant difference in both the groups.

TABLE – 14

CHANGE IN BLOOD INDICES



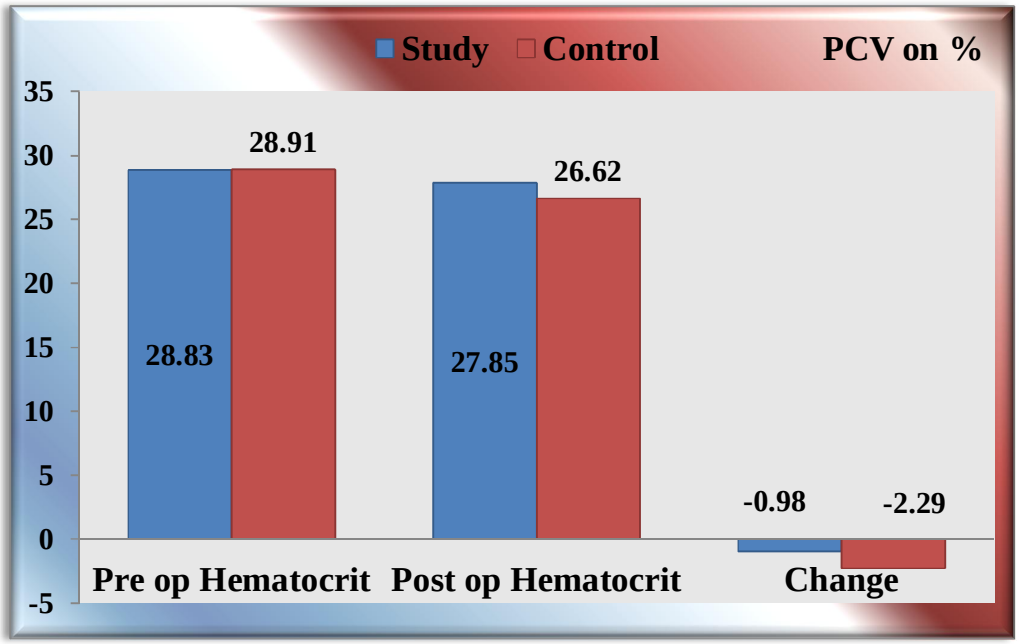


TABLE – 15

ADDITIONAL UTEROTONICS

Additional Uterotonics	Study		Control	
	Number	%	Number	%
Yes	8	5%	18	12%
No	142	95%	132	88%

Chi – Square (X^2) = 4.21

P Value = 0.04 (Significant)

Table – 15 Shows those who need additional uterotonics in both the groups.Eight patients in the study group needed additional uterotonics compared to 18 Patients in the control group. There was statistically significant difference in both the groups.

TABLE – 15

ADDITIONAL UTEROTONICS

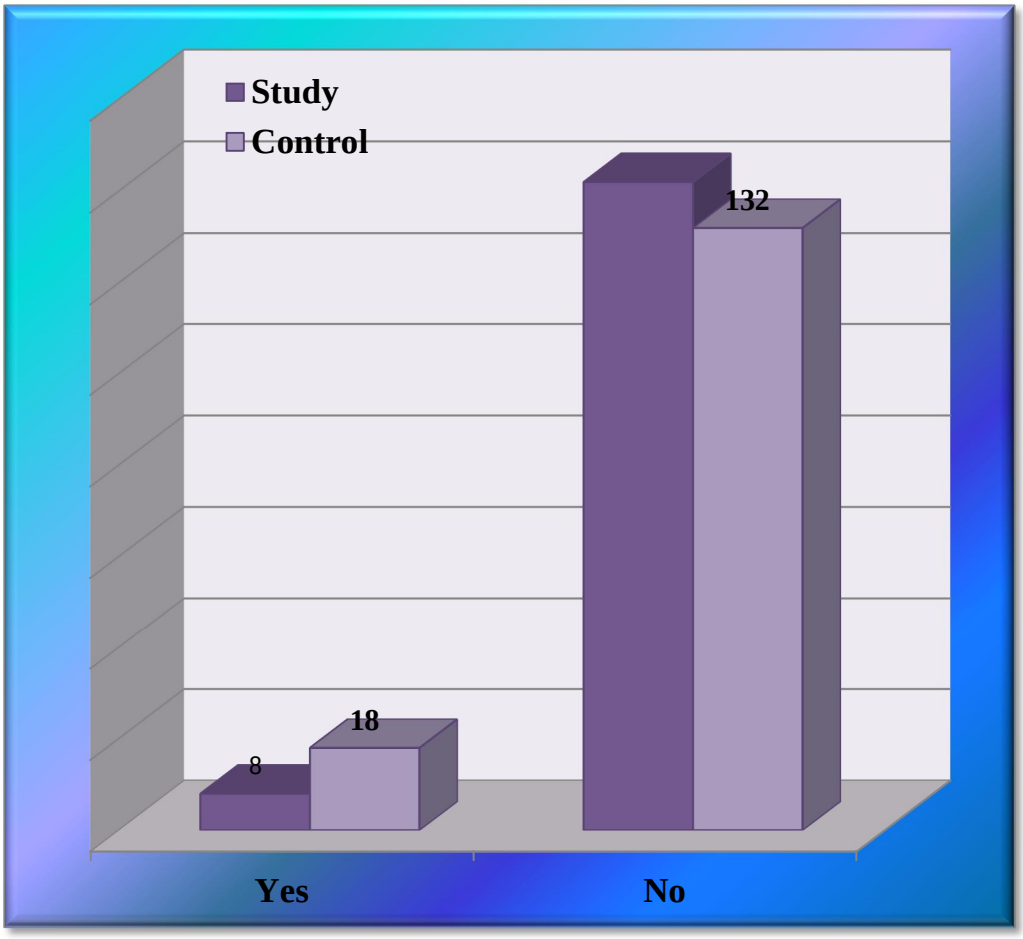


TABLE – 16

COMPARISON OF BIRTH WEIGHT OF BABY

Birth weight of Baby in kgs	Study		Control		P
	Mean	S.D	Mean	S.D	
B.W. of Baby in Kgs	2.841	0.122	2.806	0145	0.226 (NS)

Table – 16 Shows mean birth weight of babies between study and control groups. Mean birth weight was 2.806(kg) in control group and 2.841 kg in study group. There was no statistically significant difference in birth weight in both the groups (P = 0.226). Both groups were comparable.

TABLE – 16

COMPARISON OF BIRTH WEIGHT OF BABY

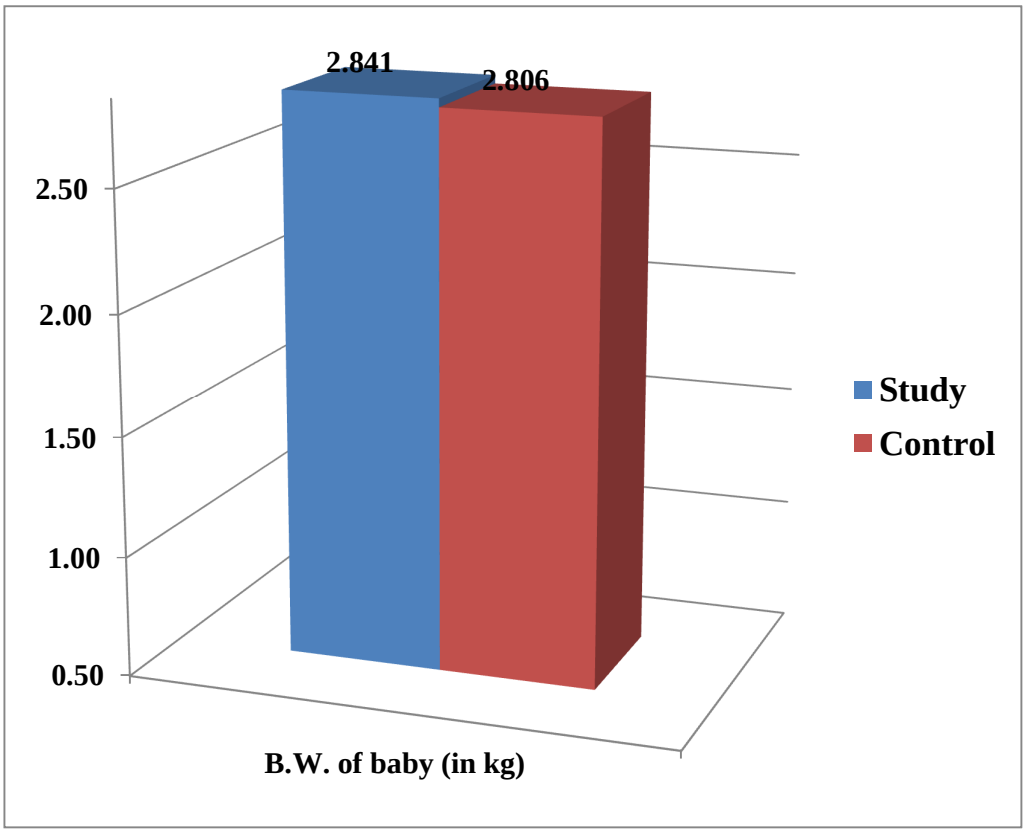


TABLE – 17

MATERNAL BLOOD TRANSFUSION

Blood Transfusion	Study		Control	
	Number	%	Number	%
Yes	2	1%	9	6%
No	148	99%	141	94%

Chi – Square cost = 4.624

P Value = 0.032 (S)

Table-17 shows number of patients those who needed blood transfusion in both groups.9 Patients (6%) in the control group needed blood transfusion compared to only 2 patients (1%) needed blood transfusion.

There was statistically significant difference(P = 0.03) in both the groups.

TABLE – 17

MATERNAL BLOOD TRANSFUSION

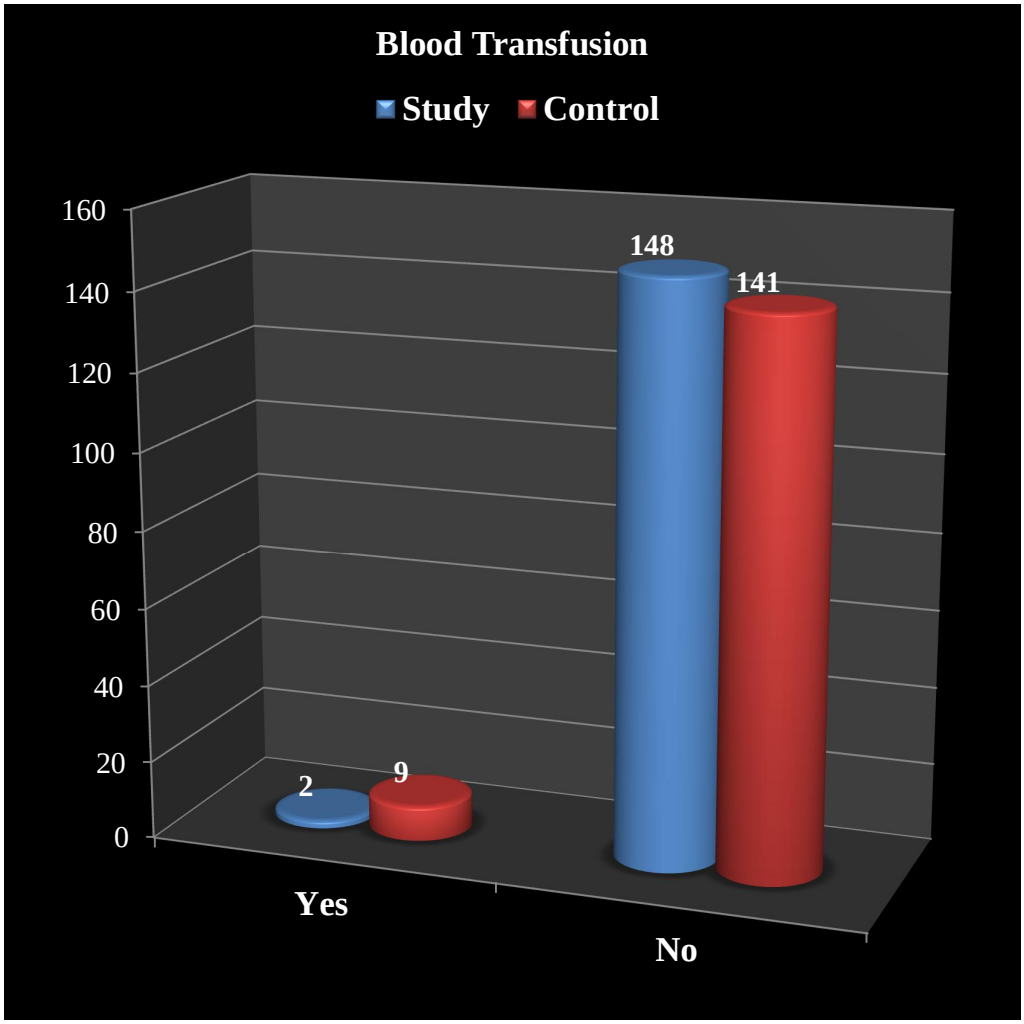


Table – 18

ADVERSE DRUG REACTIONS IN BOTH THE GROUPS

Complication	Study		Control	
	Number	%	Number	%
Nausea	22	14%	17	11%
Vomiting	09	6%	14	.9%
Diarrhoea	01	0.5%	00	
Signs of Thrombosis	00		00	

Chi square test $X^2 \rightarrow 2.73$, P Value: 0.435 (NS)

Table – 17 Shows adverse drug reactions Nausea, Vomiting, diarrhoea occurred in 22,9,1 cases in the study group and in the control group 17,14,0 cases respectively.

There was no statistical difference in adverse reaction between study and control group suggesting tranexamic acid has no significant adverse drug reaction. There is no increase incidence of thrombosis in this study

Table – 18

ADVERSE DRUG REACTIONS IN BOTH THE GROUPS

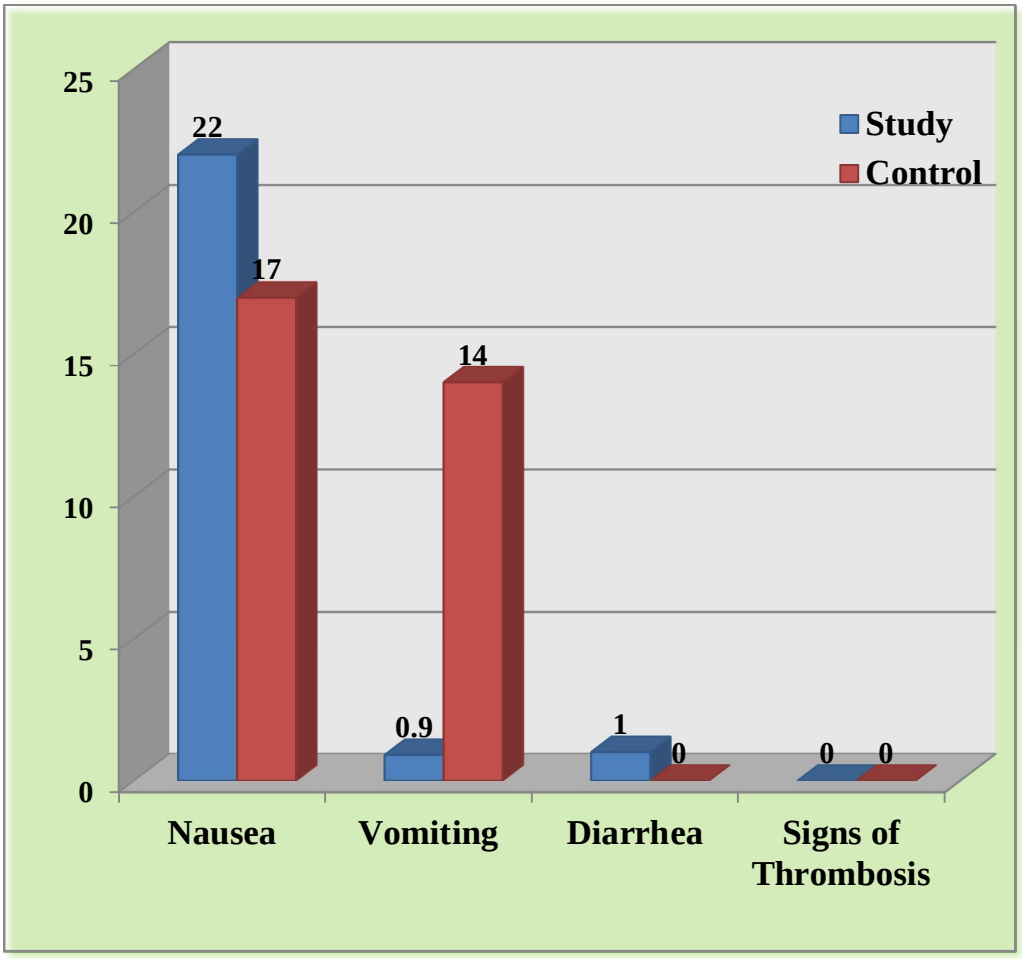


TABLE – 19 APGAR SCORE

COMPARISON OF APGAR IN BOTH THE GROUPS

Apgar Score	Study		Control	
	Number	%	Number	%
≥ 8/10	145	97%	148	99%
< 8/10	5	3%	2	1%

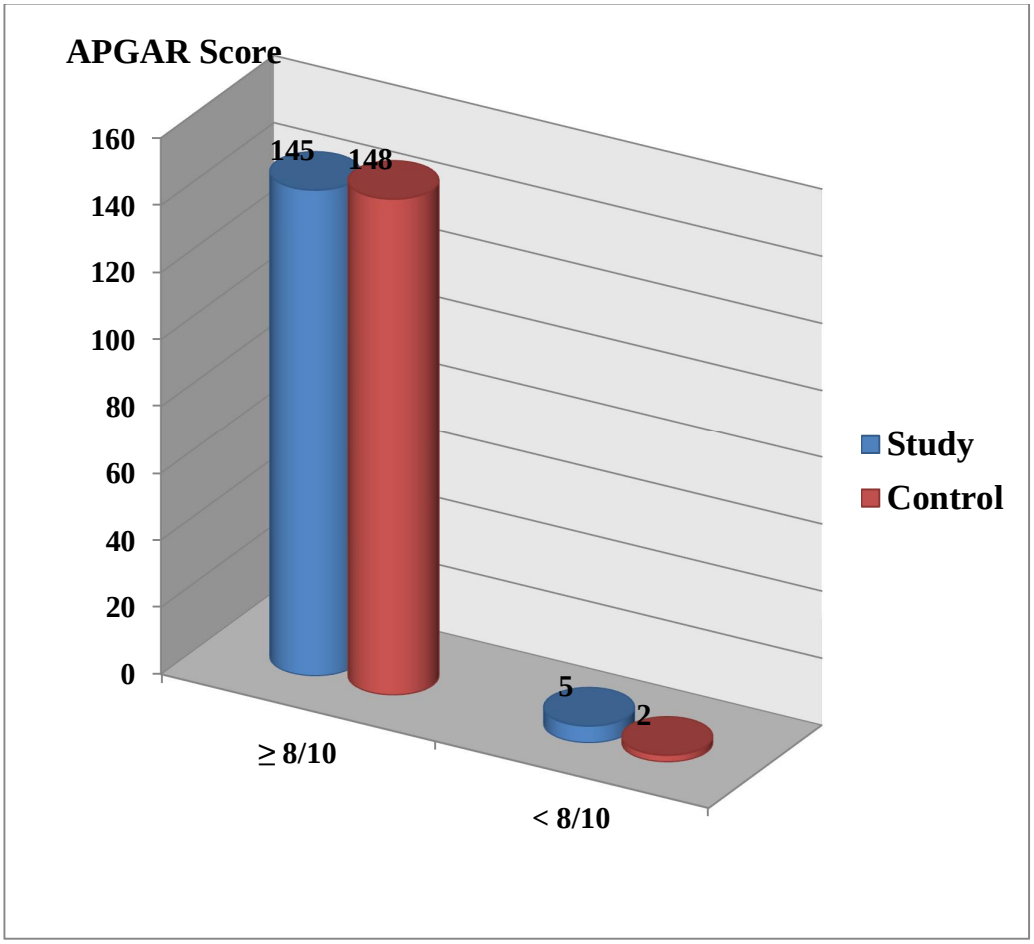
Chi – Square (X^2) test = 1.316

P value = 0.251

Table 18 Compares the APGAR Scores between study and control groups. There was no statistically significant difference in the Apgar score between study and control groups and the APGAR Scores was not adversely affected by the drug

TABLE – 19 APGAR SCORE

COMPARISON OF APGAR IN BOTH THE GROUPS



SWAB WEIGHING METHOD

TRANEXAMIC ACID AMPULE

DISCUSSION

Caesarean section is one of the most frequently performed obstetric surgery all over the world[8](Ramadani et al). Maternal mortality and morbidity is increased due toincreased blood loss during caesarean section.

During placental delivery the fibrinolytic system gets activated and fibrinogen and fibrin are rapidly degraded. These effects can last up to 6-10 hrs postpartum causing more bleeding.

Tranexamic acid is an anti fibrinolytic and its use appears to reduce blood loss during caesarean section. Reducing operative blood loss would reduce the need for blood transfusions and also reduces the post partum anaemia which is a major cause of maternal morbidity and makes the women more vulnerable to major PPH in future pregnancies. Hence, we decided to use tranexamic acid prophylactically, a cost effective drug in our study and observe its efficacy and safety in reducing blood loss during and after caesarean section.

1) <u>Maternal Age</u>:-

In our study the age groups were distributed from 18 to 35 years of age. Maximum percentage of patients belongs to 20-24yrs of age of which 47% in the study group and 55% in the control group.In a study

conducted at Lyari general hospital Karachi from March 2009 to April 2011 the mean age was 24yrs.

2) <u>Obstetric Formula</u>:-

In our study primigravidas are more in both groups than second gravidas. In study group 80% were primigravidas 20% were second gravidas. In control group 73% were primigravidas and 27% were 2^{nd}gravidas. Similarly study conducted by Ming-YingGai et al at peking union medical college hospital, Beijing 2004, 180 pregnant women were included in their study, majority are primigravidas.

3) <u>Subjective Characters</u>:-

In our study mean height was 151.89cm in the study group, 152.38 cm in the control group. Mean weight was 51.90kg in study group 51.95kg in control group.In Similar study conducted by Patel purvi and Gohelmayur et al at SSG Medical College Hospital, Baroda, Gujarat the mean height was 152.57cm and mean weight was 49.64cm.

4) <u>Indication for LSCS</u>:-

In our study the maximum percentage of LSCS was done for foetal distress which accounts for 33% in the study group and 36% in the control group, second major is the cephalopelvic disproportion which accounts for 25% in the study group and 30% in the control group, failed induction 14% in the study group and 10% in the control

group, Breech presentation 10% in the study group 7% in the control group, severe oligohydramnios9% in the study group 9% in the control group, PROM and failure to progress contributes 10% in the study group and 7% in the control group. In a similar study conducted by Ali Movafeghet al 2011 at Shariati hospital, University of Medical sciences, and Tehran showed majority of the LSCS was for foetal distress, cephalopelvic disproportion and for failure to progress.

5) **Changes in vital parameters:-**

In our study, mean pre operative vital parameters are comparable in both the groups. The vital parameters which are monitored during the time of placental delivery and 1 hour and 2hour were comparable in both the groups. Similarly a study by A movafegh et al 2011 at Shariati hospital Teharan vital signs were comparable, statistically no significant difference in vital parameters at the time of placental delivery 1hr, 2hrs after surgery. Similarly Goelmayur etal 2007, atSSG medical college hospital, Baroda there was no statistically significant difference in heart rate, respiratory rate and blood pressure during, immediately after placental delivery 1hr and 2hrs postpartum.

6) <u>Blood Loss</u>:-

Our study showed mean blood loss from placental delivery to end of surgery was 305.38ml in the study group and 371.30ml in the control group. The mean blood loss from end of surgery to 2hrs postpartumwas74.28ml in the study group and 114.48 in the control group.The mean total blood loss from placental delivery to 2hrs postpartum was 379.66 in the study group, 485.45ml in the control group.

In a similar study by GohelMayar, Patel purvi, at Baroda medical college hospital Gujarat 2007 showed that blood loss from placental delivery to end of surgery was 339.76ml in the control group and 299.21ml in the study group. Blood loss from end of LSCS to 2hrs postpartum was 75.7ml in the study group and 133.03ml in the control group. Total blood loss from placental delivery to 2hrs postpartum was 374.9ml in the study group and 472.79ml in control group.

- AfshanShahid et al – Lyari general hospital Karachi 2011

  Blood loss from placental delivery to end of LSCS was 356.44 in study group 710.22ml in the control group.

  Blood loss from end of LSCS to 2hrs postpartum was 35.68ml in the study group and 43.63ml in the control group.

- Ali Movofegh et al – Shariati hospital Tehran 2011.

  Blood loss from placental delivery to end of LSCS was 262ml in the study group and404ml in the control group.

  Blood loss from end of LSCS to 2hrs postpartum was 67.1ml in the study and 141ml in the control group. These results were comparable with our study.

7) Incidence of blood loss >500ml

Our study showed, fourteen members 9% in the study group had blood loss >500ml compared to 29 members 19% in the control group.

Similarly GoelMayur et al at SSG medical college hospital, Baroda blood loss >500ml was 10% in the study group and 28% in the control group.

- Zheng et al, Teaching hospital of Beijing 2011, Blood loss more than 400ml was significantly reduced by tranexamic acid during normal vaginal delivery.
- Gai, Wu et al, Peking union medical college hospital, Beijing Blood loss more than 500ml was significantly reduced by tranexamic acid during and after caesarean section.

- Bresnoc K et al, observed that tranexamic acid significantly reduces the blood loss and the incidence of postpartum haemorrhage in vaginal delivery.

8).Changes in blood in dices.

Our study showed mean postoperative fall of haemoglobin was about 1gm% in the study group and 1.551gm% in the control group.

- Afshanshahid et al, Lyari hospital Karachi 2011.

  Mean fall of haemoglobin was 1.09 in the tranexamic acid group, and 1.88gm% in the control group

  Mean fall of post operative haematocrit was 1.89 in the tranexamic acid group, and 4.30 in the control group.

- Ali Movafegh et al 2011. Iran

  Mean fall of postoperative haemoglobin was 1.0gm% in tranexamic acid group and 1.8gm% in the control group.

- SanjanaHalder et al 2013. India

  Mean fall of haemoglobin value was1.214gm% in the tranexamic acid group and 1.7256gm% in the control group.

  These results were comparable with our study.

9) Additional Uterotonics:-

In our study, additional uterotonics were needed in 5% of the patients in the study group and 12% in the control group.

- Gungorduk et al, Mardin women's hospital Mardin, additional uterotonics were needed in 4% of tranexamic acid group and 8.5% in the control group.
- Ali Movafegh et al 2011 Additonal uterotonics use were significantly reduced in tranexamic acid group patients.

These results were comparable with our study.

10) Maternal blood transfusion:-

In our study, maternal blood transfusion was 1% in the tranexamic acid group and 6% in the control group.

The results were same in a similar study conducted by the division of obstetrics and Gynecology, University of Oslo, Norway in 2000.

11). **Duration of Surgery**:-

Our study showed, mean duration was 41.69 minutes in the tranexamic acid group and 41.90 minutes in the control group.

Shahid et al Dow University of Health Sciences, mean duration of surgery was 45 to 50 minutes in all patients and Ali movafegh et al,mean duration of surgery was 40.2 in all the patients.

12). **Maternal Complications**:-

The side effects of tranexamic acid nausea, vomiting, diarrhoea were not statistically significantin both the groups in our study. The incidence of thrombosis was not reported in our study but still more number of patients need to be observed for its occurrence.

13).APGAR Score:-

APGAR score was comparable in both the groups. In our study there is no statistically significant difference in both the groups. These results were comparable with previous studies.

SUMMARY

* The study was conducted in the department of obstetrics and Gynaecology, R.S.R.M. Lying in hospital, Stanley medical college, Chennai to clinically observe the blood loss during and after caesarean section.

* 300 patients were selected for the study. 150 patients were included in the study group. 150 patients were included in the control group.

* The possible confounding factors like age, height, weight and gravidity were comparable in both the groups.

* Distribution of cases with respect to indication of LSCS likefoetal distress, cephalo pelvic disproportion, failed induction, breech, Severe oligohydramnios, PROM with failure to progress were comparable in both the groups.

* Study group showed significant decrease in amount of blood loss from time of placental delivery to 2hrs postpartum around (106.12ml)

* Study group showed significant decrease in blood loss from time of placental delivery to end of surgery (around 65.92ml)

* Study group showed significant decreases in blood loss from end of surgery to 2hrs postpartum (around 40.2ml)

* The incidence of blood loss >500ml was significantly reduced in study group than control group 9% study group, 19% in the control group.

* Postoperative fall of haemoglobin significantly reduced than control group

* Postoperative fall in haematocrit values are significantly reduced in study group compared to control group.

* There was no significant difference in the vital signs in both the groups from the time of placental delivery to 2hrs postpartum.

* There was no significant difference in birth weight, duration of surgery and APGAR scores.

* The need for blood transfusion and additional uterotonics were significantly reduced in tranexamic acid group.

* The incidences of adverse effects such as nausea vomiting, diarrhoea were not increased in study group and the incidence of thrombosis was not increased with the use of tranexamic acid.

CONCLUSION

Intravenous tranexamic acid when given prophylactically 20 minutes before skin incision appears to reduce the amount of blood loss during and after caesarean section.Hence it can be recommended for reducing blood loss in caesarean section. Tranexamic acid was not associated with any adverse perinatal outcome.

It did not have much maternal side effects. Some studies observed that tranexamic acid minimally increases the risk of thromboembolism which was not observed in our study. Further studies are necessary to evaluate the efficacy in pregnancies at high risk for PPH.

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ABBRIVIATIONS

LSCS	-	Lower Segment Caesarean Section
DIC	-	Disseminated intravascular coagulation
HELLP	-	Haemolysis, Elevated liver enzymes, Low platelets.
ITP	-	Idiopathic Thrombocytopenic purpura
APGAR	-	Appearance, Pulse, Grimace, Activity, Respiration
IUFD	-	Intra Uterine Foetal Death.
HB	-	Haemoglobin
PPH	-	Post Partum Haemorrhage
LFT	-	Liver Function Test
RFT	-	Renal Function Test
BT	-	Bleeding Time
CT	-	Clotting Time

PROFORMA

Name Age IP No.

LMP: Gestational age

EDD: Date of Delivery

DOA:

DOD:

Obstetric Formula:

Complaints: Pain, Bleeding P/V, LeakingP/V

MENSTRUAL HISTORY: R/IR

MARITAL HISTORY: Consanginous/Non-Consanginous

OBSTETRIC HISTORY:

S.No.	GA at Birth	LCB	Mode of Del	Birth wt	Place

PRESENT PREGNANACY:
Booked Immunised Complications

PAST HISTORY:
H/O HT DM BA PT

H/O Bleeding disorders

H/O Allergy

PERSONAL HISTORY:

Sleep

Appetite

Bladder and Bowel habits

FAMILY HISTORY: HTN/DM/BA/PT

GENERAL EXAMINATION:

HT:
WT:
Pallor:
Pedal edema:
Temp:
Pulse:
BP:
CVS:
RS:
Breast:
Thyroid:

PER ABDOMINAL EXAMINATION:

PER VAGINAL EXAMINATION:

Time of Administration of drug	Time of BabyDelivery	Indication for C.S	Birth Weight of Baby	Blood loss from Placenta l delivery to end of surgery	Blood loss From End of Surgery to hours Post Partum

INVESTIGATIONS:

HB

PCV

URINE R/E

BLOOD SUGAR, UREA, CREATININE

BT, CT

BLOOD GROUPING AND TYPING

LIVER FUNCTION TEST

S. BILIRUBIN

SGOT

SGPT

SAP

REMARKS

1. Blood loss from delivery of placenta to end of surgery
2. Blood loss from end of surgery to 2 hours post partum
3. Maternal complications
4. Post operative haemoglobin and haematocrit
5. Need for additional uterotonics and blood transfusion.
6. Neonatal status
7. Side effects of drug

CONSENT FORM

STUDY TITLE : "EFFICACY AND SAFETY OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS DURING AND AFTER CAESAREAN SECTION".

STUDY CENTRE : R.S.R.M. Lying in Hospital, Stanley Medical College, Chennai.

PARTICIPANT NAME : **AGE:** **SEX**: **J.D.NO.**

I confirm that I have understood the purpose of procedure for the above study, I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I understand that the investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to the current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties of published, unless as required under the law. I agree not to restrict the use of any results that arise from the study.

I hereby consent to participate in this study of **:** "EFFICACY AND SAFETY OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS DURING AND AFTER CAESAREAN SECTION"

Place : Signature of Investigator:

Date : Study Investigators Name

Institution : Signature / Thumb Impression of patient

INSTITUTIONAL ETHICAL COMMITTEE, STANLEY MEDICAL COLLEGE, CHENNAI-1

Title of the Work : Efficacy and safety of tranexamic acid in reducing blood Loss in caesarean section

Principal Investigator : Dr.S.Kalpana

Designation : PG in MS(OG)

Department : Department of OG
Government Stanley Medical College.
Chennai-1

The request for an approval from the Institutional Ethical Committee (IEC) was considered on the IEC meeting held on 08.04.2013 at the Council Hall, Stanley Medical College, Chennai-1 at 2PM

The members of the Committee, the secretary and the Chairman are pleased to approve the proposed work mentioned above, submitted by the principal investigator.

The Principal investigator and their team are directed to adhere to the guidelines given below:

1. You should inform the IEC in case of changes in study procedure, site investigator investigation or guide or any other changes.
2. You should not deviate from the area of the work for which you applied for ethical clearance.
3. You should inform the IEC immediately, in case of any adverse events or serious adverse reaction.
4. You should abide to the rules and regulation of the institution(s).
5. You should complete the work within the specified period and if any extension of time is required, you should apply for permission again and do the work.
6. You should submit the summary of the work to the ethical committee on completion of the work.

19/9/13

MEMBER SECRETARY,
IEC, SMC, CHENNAI

CASE

S.No	Name	Age	IP.No	Parity	Ht in cms	Wt in Kg	PRE-OPERATIVE					Duration of the LSCS in Min	Indication	Bw Baby	Bllod loss frm Placental dlry to END-Lscs (a)	Bllod loss frm EO Lscs 2 hrs pp (b)	Ttl B.L. Frm Pl.del to 2 hrs pp	BL More than 500ml	Addnl Urerotonics	POST OPERATIVE VITALS									HP in Gms	PCV in %	MaternalBlood Transfusion	Maternal Complication	APGAR Score <8/10
																				At the Time of			1 Hr After			2 Hr After								
																				Placental Dlry			Surgery			Surgery								
							PR/Min	BP in mm HS	RR/Min	Hb in gms	PCV									PR/Min	BP in mm Hg	RR/Min	PR/Min	BP in mm Hg	RR/Min	PR/Min	BP in mm Hg	RR/Min							
1	Anandhi	19	1935	Primi	155	53	82	122/80	18	9.60	28	41	F.I	2.84	289	71	360	No	no	86	120/74	18	85	128/80	19	84	126/80	19	8.6	27	No	N	no
2	Nirmala	24	1321	G2P1L1	151	52	83	126/78	19	9.60	28	42	S.O	2.78	288	72	360	No	no	85	110/80	18	86	121/82	19	78	126/78	19	8.6	27	No	V	no
3	Sathya	20	105	Primi	150	50	81	120/80	19	9.80	29	42	CPD	2.83	290	69	359	No	no	86	118/80	18	80	118/86	18	88	126/80	19	8.8	28	No	no	no
4	Sumathy	21	185	Primi	151	51	82	118/78	19	9.80	29	42	PFtoP	2.82	287	68	355	No	no	84	116/70	19	86	120/80	19	82	120/76	19	8.8	28	No	no	no
5	Shobana	23	430	Primi	152	53	82	126/78	17	10.20	31	41	F.D	2.80	288	70	358	No	no	85	118/70	20	83	118/86	18	81	120/76	19	9	30	No	no	no
6	Sunitha	22	152	Primi	153	50	80	124/78	18	10.20	31	39	PFtoP	2.85	460	110	570	Y	no	85	120/80	19	81	120/80	19	84	120/76	18	9	30	No	no	no
7	Bhakiam	30	383	Primi	152	54	84	118/78	19	10.20	31	42	F.D	2.80	287	71	358	No	no	86	118/82	18	83	120/84	19	84	120/78	19	9.2	30	No	no	no
8	Monisha	18	75	Primi	151	52	82	124/78	19	10.00	30	44	PFtoP	2.79	286	70	356	No	no	87	120/82	17	84	118/82	18	83	120/80	19	9	29	No	no	no
9	Dhanalakshmi	22	480	Primi	120	53	83	118/80	19	9.80	29	42	F.I	2.81	291	68	359	No	no	85	118/84	19	83	120/86	19	80	124/78	18	8.8	28	No	no	no
10	Revathy	26	530	Primi	153	51	81	124/78	19	9.60	28	43	Breech	2.91	290	69	359	No	no	86	120/80	18	81	118/84	18	81	124/78	18	8.6	27	No	no	no
11	Lavanya	27	184	G2P1L1	151	52	80	124/78	18	9.60	28	41	CPD	2.93	287	67	354	No	no	86	118/76	19	83	120/80	19	82	120/80	17	8.6	27	No	no	no
12	KamalaKani	20	98	Primi	155	53	79	124/78	16	9.80	29	43	CPD	2.78	289	70	359	No	no	86	118/78	18	81	118/84	19	78	126/86	18	8.6	28	No	no	no
13	Gunasundari	28	89	Primi	151	51	84	124/80	17	9.60	29	42	Breech	3.00	289	71	360	No	no	85	118/76	19	84	118/80	18	84	124/80	19	8.6	28	No	no	no
14	Banumathy	30	280	G2P1L1	152	53	83	124/78	18	9.80	29	42	F.D	2.83	288	70	358	No	no	86	120/70	19	81	120/80	19	84	124/78	19	8.8	28	No	no	no
15	Kala	25	338	Primi	151	52	82	118/80	19	9.60	28	42	CPD	2.81	281	72	353	No	no	86	118/74	18	83	120/82	20	82	124/78	18	8.6	27	No	no	no
16	Suganya	21	375	Primi	153	51	81	120/78	17	9.60	28	43	F.D	2.82	288	71	359	No	no	85	112/70	17	84	120/86	19	80	124/80	19	8.6	27	No	no	no
17	Haritha	25	414	Primi	152	52	82	121/80	18	9.80	29	42	PFtoP	2.81	286	70	356	No	no	86	114/74	18	83	120/80	17	79	120/80	19	8.8	28	No	no	no
18	Lakshmi	22	459	Primi	152	53	80	118/80	19	10.00	30	41	F.D	2.80	288	69	357	No	no	87	120/76	19	85	120/78	18	80	120/80	18	9	29	No	no	no
19	Preetha	30	502	G2P1Lo	154	54	82	118/80	19	9.80	29	42	F.D	2.87	289	68	357	No	no	85	128/72	20	86	120/82	19	82	120/80	18	8.8	28	No	no	no

20	Jansirani	26	476	Primi	155	52	83	116/78	18	9.60	28	43	F.D	2.90	450	105	555	Y	no	87	118/76	19	86	120/81	19	83	120/80	17	8.6	27	No	no	no
21	Dhivya	18	501	Primi	151	50	82	118/76	18	9.60	28	42	S.O	2.65	288	69	357	No	no	86	120/82	20	85	120/78	20	84	120/80	17	8.6	27	No	no	no
22	Shobana	23	548	Primi	150	53	83	117/78	19	9.60	28	41	F.D	2.72	289	70	359	No	no	84	122/70	19	85	118/80	19	84	124/80	19	8.6	27	No	no	yes
23	Sridevi	27	639	G2P1L1	151	51	82	118/80	19	9.80	29	41	PFtoP	2.85	288	71	359	No	no	85	129/70	18	86	118/76	18	82	120/80	19	8.8	28	No	N	no
24	Kudia Devi	21	636	Primi	149	50	84	120/78	18	9.80	29	42	S.O	2.65	289	72	361	No	no	86	118/76	18	81	118/80	19	84	120/80	19	8.8	28	No	no	no
25	Dishath	30	717	Primi	150	51	80	120/80	19	9.80	29	42	CPD	2.83	432	103	535	Y	no	86	120/76	18	81	120/80	19	81	124/80	19	8.8	28	No	no	no
26	Mala	25	828	Primi	151	51	81	118/78	18	9.60	28	41	CPD	2.85	288	70	358	No	no	85	118/78	19	83	120/80	18	82	129/80	19	8.8	27	No	V	no
27	Elavarasi	21	922	G2P1L1	151	51	81	120/80	18	9.60	28	43	S.O	2.85	289	71	360	No	no	85	120/76	19	85	120/80	18	83	121/84	19	8.6	27	No	V	no
28	Sumathy	19	976	Primi	152	54	80	118/78	19	9.60	28	42	Breech	2.95	290	70	360	No	no	84	118/78	19	85	120/82	17	81	121/88	19	8.6	27	No	no	no
29	Kalaiselvi	25	944	Primi	154	52	83	120/78	19	9.80	29	42	F.D	2.90	291	69	360	No	no	86	118/76	18	84	120/84	18	84	110/80	18	8.8	28	No	N	no
30	Mahalakshmi	22	1008	Primi	150	50	82	120/76	19	9.80	29	42	F.I	2.75	292	67	359	No	no	85	120/76	17	86	120/80	19	78	120/76	17	8.8	28	No	no	no
31	Savithri	26	771	Primi	152	52	83	120/80	18	9.60	28	41	F.D	2.95	292	68	360	No	no	84	120/72	19	87	118/76	19	84	120/80	18	8.6	27	No	no	no
32	Rinomaria	23	1052	Primi	151	51	82	118/78	17	9.60	28	41	CPD	2.68	291	69	360	No	no	86	118/72	20	83	118/78	18	81	124/78	19	8.6	27	No	no	no
33	Vijaya	30	948	G2P1L1	153	53	81	120/76	16	9.60	28	42	F.D	2.95	471	104	575	Y	no	84	120/70	16	87	118/80	19	78	126/78	19	8.6	27	No	no	no
34	Muthumary	27	1141	Primi	152	51	82	118/78	17	9.80	29	41	Breech	2.80	290	70	360	No	no	84	116/72	19	84	118/78	18	80	124/84	18	86	28	No	no	no
35	Uma	20	1203	Primi	153	54	84	120/76	17	10.00	30	40	CPD	2.78	289	68	357	No	no	86	118/72	19	85	118/76	17	82	120/80	17	8.8	29	No	no	no
36	Maheswari	28	984	Primi	151	52	82	118/78	18	10.20	31	42	S.O	2.75	288	71	359	No	no	85	116/82	18	86	114/78	17	80	126/80	18	9	30	No	no	no
37	Nalini	19	1362	Primi	152	50	81	118/80	19	10.00	30	43	CPD	2.85	287	72	359	No	no	84	118/70	17	86	118/80	18	81	121/80	19	9.2	29	No	N	no
38	Barkavi	23	1221	Primi	152	53	82	120/80	19	9.60	28	42	CPD	2.40	288	69	357	No	no	84	120/72	18	86	116/78	19	82	116/80	19	9	27	No	yes	no
39	Bindia	23	1376	G2P1L1	153	51	83	118/80	18	10.00	30	41	FI	2.90	289	70	359	No	no	85	118/76	19	83	118/80	18	83	118/82	18	8.6	29	No	no	no
40	Pencillammal	26	1458	Primi	150	52	82	118/70	18	10.20	31	42	PFtoP	2.78	430	96	526	Y	no	86	117/80	19	83	120/80	19	79	120/84	19	9	30	No	no	no
41	Narmadha	20	1491	Primi	154	52	82	120/80	19	9.60	28	41	F.D	2.85	288	72	360	No	no	86	124/76	18	83	116/82	19	80	118/80	20	9	27	No	no	no
42	Roja	25	1480	Primi	153	53	80	122/84	19	9.80	29	42	CPD	2.80	289	69	358	No	no	85	112/74	19	86	120/82	18	81	120/82	16	8.6	28	No	no	no
43	Selvi	21	1733	Primi	154	51	81	118/78	17	9.60	28	41	Breech	2.89	290	71	361	No	no	86	116/76	18	84	116/82	19	82	120/76	17	8.8	27	No	N	no
44	Padma	25	1290	Primi	151	53	82	120/80	19	9.60	28	41	CPD	2.80	291	69	360	No	no	85	120/80	17	84	120/80	19	84	118/82	19	8.6	27	No	no	no
45	Jansirani	26	1833	Peimi	152	54	82	121/80	18	9.80	29	42	F.D	2.95	290	68	358	No	no	84	120/76	17	86	118/78	18	81	116/78	19	8.6	28	No	no	no

46	Radhika	22	1846	Primi	153	51	81	118/78	18	9.60	28	42	CPD	2.85	288	71	359	No	no	84	116/74	18	84	120/82	18	83	118/78	19	8.8	27	No	no	no
47	Parveen	27	1655	G2P1Lo	153	50	80	120/86	18	9.80	29	44	CPD	2.75	289	72	361	No	no	85	114/76	19	86	118/82	17	82	118/80	18	8.6	28	No	no	no
48	Kanchana	24	2075	Primi	151	52	84	110/80	18	9.60	28	45	F.D	2.80	288	69	357	No	no	86	120/76	19	84	116/80	18	80	120/78	19	8.6	27	No	no	no
49	Sangeetha	25	2506	Primi	153	52	82	120/80	18	9.80	29	38	CPD	2.95	287	70	357	No	no	85	118/76	18	86	120/82	19	78	120/78	19	8.8	28	No	N	no
50	Aabitha	18	2170	Primi	152	51	84	118/76	19	9.60	28	44	CPD	2.87	560	160	720	Y	yes	86	118/70	17	83	118/80	18	81	120/80	20	8.6	27	Yes	no	no
51	Punithavalli	26	2246	G2P1L1	151	50	82	120/78	19	9.80	29	41	S.O	2.83	288	71	359	No	no	86	116/70	18	83	118/80	19	82	120/78	19	8.8	28	No	V	no
52	Gayathri	21	2244	Primi	151	50	82	120/80	19	9.80	28	44	S.O	2.55	450	98	548	Y	yes	85	116/70	19	85	120/80	19	81	120/81	19	8.6	27	No	no	no
53	Shanthi	25	2351	Primi	153	54	83	118/76	19	9.80	28	40	Breech	2.95	288	69	357	No	no	85	121/70	18	85	124/82	19	82	120/76	20	8.6	27	No	N	no
54	Sherin Banu	20	2371	Primi	154	52	84	120/80	19	9.80	29	41	F.I	2.75	289	70	359	No	no	86	118/76.	19	84	124/86	17	78	120/80	20	8.6	28	No	no	no
55	Chitra	26	2365	G2P1L1	155	53	85	110/80	18	9.60	28	42	CPD	2.80	290	68	358	No	no	86	116/74	17	83	120/84	17	83	120/81	19	8.4	27	No	no	no
56	Anjalai	23	2494	Primi	153	50	82	114/76	19	9.80	29	44	F.D	2.85	291	71	362	No	no	86	114/72	19	85	120/80	18	84	124/80	19	8.6	28	No	no	no
57	Shenbagam	28	2120	Primi	152	52	81	120/78	19	10.00	30	40	CPD	2.95	281	72	353	No	no	84	115/70	20	84	120/82	19	81	124/80	19	8.7	29	No	no	no
58	Kousalya	30	1530	Primi	151	52	82	110/80	18	10.00	30	41	CPD	2.85	288	68	356	No	no	84	114/74	17	85	120/82	19	84	124/80	18	9.1	29	No	N	no
59	Selvi	21	2610	Primi	150	51	83	120/86	19	9.80	29	42	CPD	2.75	289	67	356	No	no	85	116/76	19	86	124/80	19	79	120/80	17	8.6	28	No	no	no
60	Mani Megalai	29	2516	G2P1L1	151	53	82	124/78	19	9.60	28	41	F.D	2.83	287	69	356	No	no	86	120/72	20	84	126/80	18	84	120/80	18	8.8	27	No	no	no
61	Kavya	18	2618	Primi	153	52	82	122/88	18	9.80	29	44	Breech	2.85	289	71	360	No	no	84	116/70	19	87	129/84	20	79	118/80	17	8.6	28	No	no	no
62	Vasantha Mary	20	2518	Primi	151	51	81	118/78	18	9.60	28	41	F.I	2.85	290	71	361	No	no	84	117/72	17	87	120/82	17	81	120/80	19	8.6	27	No	V	no
63	Rajeshwari	25	2716	Primi	154	53	82	118/78	17	9.60	28	38	F.D	2.95	291	72	363	No	no	84	117/72	19	81	129/82	17	79	118/80	19	8.6	27	No	no	no
64	Sasikala	23	2815	Primi	153	54	82	116/74	18	9.80	29	41	PFtoP	2.90	496	124	620	Y	yes	86	118/70	18	84	120/80	18	80	120/80	17	8.8	28	No	no	no
65	Nadhiya	27	2835	G2P1L1	154	51	82	120/80	19	9.60	28	40	F.D	2.95	290	69	359	No	no	84	120/70	17	85	118/82	20	79	120/82	20	8.6	27	No	no	no
66	Ammu	22	3810	Primi	152	52	83	110/78	19	10.20	31	41	CPD	2.83	289	70	359	No	no	84	121/72	18	85	120/80	19	84	120/80	19	9.1	30	No	N	no
67	Sumathy	25	2995	Primi	150	51	84	120/80	18	10.20	31	42	F.D	2.85	288	72	360	No	no	85	122/70	17	86	118/82	19	81	118/80	19	9.1	30	No	no	no
68	Usha	25	2701	Primi	151	53	82	110/78	19	10.00	30	41	Breech	2.83	288	69	357	No	no	86	120/76	18	83	120/80	19	82	124/84	18	8.9	29	No	no	no
69	Sulthana	21	2718	Primi	154	54	82	114/76	17	9.60	28	42	F.I	2.90	285	70	355	No	no	86	121/77	18	81	118/80	19	83	120/76	19	9.1	27	No	no	no
70	Durga	27	3052	G2P1Lo	151	53	81	120/80	18	9.80	29	39	S.O	2.85	301	71	372	No	no	87	118/74	17	84	120/80	20	79	120/82	20	8.8	28	No	no	no
71	Rekha	26	3104	Primi	150	52	82	122/78	18	9.60	`28	41	PFtoP	2.80	302	69	371	No	no	85	114/72	18	83	120/74	17	80	124/84	19	8.6	27	No	no	no

72	Sakunthala	25	12175	Primi	151	51	81	120/78	19	10.00	30	44	F.D	2.95	289	67	356	No	no	84	116/70	18	81	120/80	17	81	124/78	19	8.6	29	No	no	yes
73	Yasmin	22	12217	Primi	152	52	80	118/70	17	10.20	31	41	F.D	2.85	290	71	361	No	no	84	114/72	19	86	118/82	18	82	122/78	20	9.1	30	No	N	no
74	Chinnammal	25	12697	Primi	151	53	82	120/80	18	9.80	29	41	CPD	2.83	291	70	361	No	no	84	112/74	19	86	120/82	18	83	126/86	18	8.8	28	No	no	no
75	Sasikala	23	12723	Primi	153	54	83	118/78	18	9.60	28	42	F.I	2.85	290	71	361	No	no	85	116/70	20	83	118/78	19	84	124/78	19	8.6	27	No	no	no
76	Rekha	22	12735	G2P1L1	154	50	82	120/80	19	9.80	29	39	F.D	2.85	410	115	525	Y	yes	85	116/74	17	84	120/82	20	85	115/86	19	8.8	28	No	no	no
77	Ezhil	25	12437	Primi	151	52	80	120/80	19	9.60	28	41	Breech	2.95	425	115	540	Y	yes	85	120/86	19	84	120/82	19	80	122/81	19	8.6	28	No	N	no
78	Inakia	20	12690	Peimi	152	53	84	118/80	19	9.60	28	41	F.I	2.85	290	71	361	No	no	86	118/78	19	84	118/82	18	81	124/84	19	8.6	27	No	no	no
79	Shalini	23	12685	Primi	151	52	82	120/80	19	9.80	28	42	S.O	2.73	281	70	351	No	no	76	120/80	20	84	116/80	18	82	124/84	18	8.8	27	No	no	no
80	Poornima	30	12778	G2P1L1	154	54	83	118/80	18	9.60	28	41	CPD	2.83	288	69	357	No	no	85	118/76	17	83	120/82	19	80	121/81	18	8.6	27	No	no	no
81	Veeralakshmi	26	12820	Primi	150	51	81	120/80	19	9.80	28	42	PFtoP	2.75	287	70	357	No	no	86	120/82	17	84	120/80	19	84	119/79	19	8.8	27	No	no	no
82	Vijayalakshmi	22	12422	Primi	152	50	84	118/80	18	10.00	30	41	CPD	2.85	289	72	361	No	no	86	118/76	18	85	118/82	19	81	118/76	20	9	29	No	no	no
83	Saritha	27	12834	Primi	151	52	80	116/80	19	10.20	31	42	F.D	2.95	290	69	359	No	no	86	120/74	18	86	116/76	17	80	120/80	18	9	30	No	V	no
84	Devi	21	12804	Primi	153	53	82	120/86	19	9.60	28	41	Breech	2.88	291	67	358	No	no	85	118/76	19	86	118/75	17	78	118/78	17	8.6	30	No	no	no
85	Suseela	25	12784	G2P1L1	150	53	83	124/78	18	9.80	29	42	F.I	2.78	290	68	358	No	no	84	116/74	18	81	120/78	18	81	120/80	17	8.8	27	No	no	no
86	Priya	23	12335	Primi	152	50	84	118/78	19	9.60	28	41	F.D	2.75	430	120	550	Y	yes	84	118/74	17	84	115/80	18	83	118/76	18	8.6	28	No	N	no
87	Devi	26	12559	Primi	153	52	82	130/78	18	9.60	28	42	CPD	2.85	289	71	360	No	no	83	119/77	18	85	120/80	17	81	118/76	19	8.6	27	No	no	no
88	Selvi	21	12803	Primi	154	53	80	110/78	19	9.80	29	40	F.D	2.85	288	68	356	No	no	86	120/76	19	85	118/82	17	84	120/78	19	8.8	27	No	no	no
89	Reena	18	12906	Primi	151	54	82	110/78	18	9.60	28	42	F.D	2.75	287	68	355	No	no	85	118/78	18	86	120/84	20	79	118/76	18	8.6	28	No	no	no
90	Akila	23	12588	Primi	153	53	84	114/78	18	9.80	29	44	F.I	2.90	288	70	358	No	no	85	120/72	19	86	120/80	19	83	116/78	17	8.8	27	No	no	no
91	Gayathri	27	12990	G2P1L1	152	51	82	120/86	19	9.80	29	42	PFtoP	2.95	281	71	352	No	no	86	118/76	19	85	120/80	19	84	120/76	17	8.8	28	No	no	no
92	Nilaveni	21	13002	Primi	151	50	82	120/80	18	9.60	28	41	CPD	2.90	288	69	357	No	no	86	116/76	18	83	118/84	18	81	118/78	18	9.6	28	No	no	no
93	Sundari	21	12660	Primi	150	52	83	122/84	19	10.20	31	42	F.D	2.85	288	70	358	No	no	87	120/76	18	84	116/78	18	82	120/82	19	9.2	27	No	N	yes
94	Jayalakshmi	28	13037	Primi	151	54	82	120/78	19	9.60	28	42	S.O	2.75	289	69	358	No	no	85	120/76	17	86	122/84	19	83	124/78	20	8.6	30	No	no	no
95	Nagalakshmi	24	13020	Primi	154	52	82	124/80	18	9.80	29	42	F.D	2.83	290	72	362	No	no	84	120/74	17	86	122/84	19	84	122/84	17	8.8	27	No	no	no
96	Nagammal	25	13062	G2P1L1	153	51	83	120/80	19	9.02	27	42	FD	2.75	291	70	361	No	no	86	116/76	20	84	120/82	20	80	124/80	17	8.4	28	No	no	no
97	Banupriya	26	13085	Primi	152	50	82	120/80	18	9.60	28	43	F.D	2.80	290	69	359	No	no	85	118/70	19	80	120/80	17	79	126/78	18	8.6	27	No	no	no

98	Manoja	20	12693	Primi	152	51	82	118/80	19	9.60	28	44	F.I	2.85	680	160	840	Y	yes	86	116/76	18	85	120/80	17	81	120/80	17	8	27	yes	no	no
99	Thangamani	27	13118	G2P1L1	151	54	83	120/80	18	9.80	29	41	CPD	2.75	288	70	358	No	no	85	114/77	19	85	120/82	18	84	120/82	17	8.8	28	No	no	no
100	Priya	21	12921	Primi	153	52	81	118/86	19	9.60	28	42	Breech	2.85	289	71	360	No	no	86	115/80	20	84	120/80	18	82	120/82	18	8.6	27	No	N	no
101	Jayalakshmi	28	13357	Primi	150	53	80	120/80	19	10.00	30	42	CPD	2.95	288	70	358	No	no	86	120/86	19	86	120/82	18	81	120/82	18	9	29	No	V	no
102	Umadevi	20	13454	Primi	152	51	80	118/80	19	9.60	28	40	PFtoP	2.85	288	71	359	No	no	86	120/80	19	86	120/86	19	81	120/80	17	8.6	27	No	N	no
103	Amudha	26	13587	G2P1L1	151	52	82	120/80	19	9.80	29	42	F.I	2.95	289	69	358	No	no	86	116/80	18	85	118/80	19	84	120/80	19	8.8	28	No	no	no
104	Uma	22	13514	Primi	152	52	82	120/78	19	9.60	28	43	F.D	2.75	291	68	359	No	no	86	120/80	17	85	120/76	20	81	120/84	19	8.8	27	No	no	no
105	Chellammal	27	13529	Primi	153	53	81	112/80	19	9.60	28	41	S.O	2.68	290	70	360	No	no	87	118/70	18	85	118/78	19	82	120/76	17	8.6	27	No	no	no
106	Jamilarani	23	13429	Primi	151	51	84	120/84	18	10.00	30	42	CPD	2.95	292	72	364	No	no	85	120/76	17	83	120/78	18	83	118/78	17	9	29	No	no	no
107	Bharathi	24	13516	Primi	152	53	82	118/78	17	10.20	31	41	Breech	2.85	290	71	361	No	no	85	120/82	17	83	118/76	18	80	120/80	18	9.2	30	No	no	no
108	Dahtchayani	30	13579	G2P1L1	152	50	83	120/76	18	9.60	28	42	F.D	2.95	289	69	358	No	no	84	120/80	18	84	120/80	19	81	124/80	18	8.6	27	No	no	no
109	Malar	28	13532	Primi	153	52	81	120/78	19	9.60	28	43	F.I	2.90	425	115	540	Y	yes	84	118/86	18	84	118/78	20	82	120/76	19	9.6	27	No	no	no
110	Gowthami	27	13586	Primi	154	51	80	118/78	19	9.80	29	42	F.D	2.85	288	71	359	No	no	85	120/80	19	85	120/80	19	83	118/76	20	8.8	28	No	no	no
111	USha	20	13523	Primi	150	53	85	120/78	19	10.20	31	41	CPD	2.92	289	69	358	No	no	86	118/80	19	86	118/80	19	84	120/82	17	9.2	30	No	N	no
112	Kartiga	26	13630	G2P1L1	153	54	84	118/76	17	10.00	30	42	F.D	2.75	287	69	356	No	no	84	120/80	17	83	120/80	18	80	118/78	17	9	29	No	no	no
113	Praveena	21	13634	Primi	152	50	81	120/76	18	9.60	28	42	F.D	2.78	288	69	357	No	no	86	120/82	17	84	120/82	18	81	120/82	16	8.6	27	No	no	no
114	PRiya	25	13677	Primi	155	52	82	120/78	19	9.60	28	42	CPD	2.85	289	67	356	No	no	86	120/84	18	83	120/84	19	78	120/84	17	8.6	27	No	V	no
115	Veerammal	22	13566	Primi	156	53	83	120/74	17	9.89	29	42	F.D	2.95	291	71	362	No	no	84	120/82	18	85	120/82	18	84	120/82	19	8.89	28	No	no	no
116	Ganga bhavani	26	13676	Primi	149	50	84	118/78	18	9.60	28	41	F.I	2.85	290	70	360	No	no	85	120/82	19	81	120/82	17	80	118/78	19	8.6	27	No	no	no
117	Vijayakumari	22	14087	G2P1L1	150	51	82	130/76	17	9.80	28	41	PFtoP	2.75	289	74	363	No	no	86	118/80	19	84	118/80	18	78	120/86	18	8.8	27	No	no	no
118	Sujatha	19	14155	Primi	151	53	82	130/86	18	10.00	30	42	S.O	2.75	287	76	363	No	no	86	120/82	20	83	120/82	19	81	118/80	19	9	29	No	N	no
119	Kavitha	28	14171	Primi	152	52	81	128/78	19	10.00	30	41	F.D	2.85	288	71	359	No	no	85	118/82	19	83	118/82	19	84	120/80	18	9	29	No	no	no
120	Jaishree	23	14116	Primi	151	50	83	118/80	17	9.60	28	42	CPD	2.90	289	72	361	No	no	84	116/78	17	81	116/76	18	83	118/76	19	8.36	27	No	no	no
121	Anandhi	29	14187	Primi	153	52	81	120/80	18	9.80	29	42	Breech	2.88	287	72	359	No	no	84	120/80	17	84	120/80	17	80	120/78	19	8.8	28	No	no	no
122	Vasanthi	25	14158	Primi	153	51	84	118/80	18	9.80	29	41	F.D	2.92	290	70	360	No	no	84	118/82	18	86	118/82	18	81	118/78	20	8.8	28	No	no	no
123	Suganya	22	14423	Primi	150	54	86	118/76	17	9.60	28	42	F.D	2.85	291	71	362	No	no	85	120/80	18	85	120/80	19	84	120/76	17	8.6	27	No	no	no

124	Shakthi	26	14138	G2P1L1	155	53	81	118/80	18	9.80	29	41	CPD	2.83	288	73	361	No	no	86	120/82	19	84	120/82	19	83	126/78	18	8.8	28	No	N	no
125	Sandhiya	21	14288	Primi	152	50	82	124/80	17	9.80	29	42	F.D	2.78	287	69	356	No	no	85	124/82	20	85	124/82	19	84	120/78	19	8.8	28	No	no	yes
126	Subalakshmi	27	14263	Primi	151	51	81	118/86	17	9.60	28	42	F.I	2.80	289	71	360	No	nn	86	120/84	19	85	120/84	19	81	118/82	19	8.6	27	No	no	no
127	Poongodi	20	14243	Primi	151	50	82	120/80	19	9.80	29	41	F.I	2.80	288	71	359	No	no	85	122/82	19	81	122/82	19	84	120/76	19	8.8	28	No	N	no
128	Nishanthi	25	14190	G2P1L1	155	53	83	120/78	19	9.69	28	42	F.D	2.95	289	70	359	No	no	86	120/80	19	85	120/80	19	82	120/80	19	8.6	27	No	no	no
129	Yamuna	21	14251	Primi	150	51	81	120/78	18	10.20	31	41	CPD	2.90	290	69	359	No	no	86	124/84	18	86	124/84	18	78	129/86	18	9.2	30	No	no	no
130	Naveena	26	14227	Primi	154	52	84	120/80	19	9.60	28	42	F.D	2.92	301	70	370	No	no	85	120/80	19	80	120/80	19	81	120/84	17	8.6	27	No	no	yes
131	Lakshmi	22	14363	Primi	151	53	85	118/80	19	9.00	27	39	CPD	2.85	276	71	347	No	no	85	116/78	19	83	124/84	19	79	121/84	19	8.6	26	No	D	no
132	Sonia	25	14504	Primi	152	54	81	120/78	17	10.00	30	42	F.D	2.78	286	71	357	No	no	87	120/76	20	84	120/80	18	83	120/80	19	8.2	29	No	no	no
133	Latha	20	14484	Primi	150	52	82	120/80	18	9.60	28	41	F.D	2.82	295	71	366	No	no	86	118/82	19	85	120/82	19	81	121/78	18	8.8	27	No	no	no
134	Seetha	26	14417	G2P1L	156	53	83	118/80	18	9.80	29	42	F.D	2.88	289	69	358	No	no	86	120/80	17	84	120/82	20	79	120/80	19	8.6	27	No	no	no
135	Mahalakshmi	22	14479	Primi	154	53	84	118/78	19	9.80	29	41	Breech	2.87	288	68	356	No	no	85	118/80	18	83	120/86	21	81	118/86	17	8.8	28	No	no	no
136	Subitha	28	16482	Primi	151	50	82	120/78	18	9.80	29	42	F.I	2.88	289	71	360	No	no	84	120/84	19	83	120/78	19	83	120/80	18	8.8	28	No	N	no
137	Arokiamary	23	16492	Primi	153	52	83	118/78	17	9.60	28	41	CPD	2.83	288	69	357	No	no	85	118/84	19	85	118/80	19	82	120/82	19	8.8	28	No	no	no
138	Dhivya	27	14550	G2P1L1	151	50	84	130/86	17	9.80	29	42	F.D	2.89	289	68	357	No	no	85	120/80	18	84	116/82	19	81	120/80	17	8.6	27	No	no	no
139	Savithri	24	14581	Primi	154	52	82	110/78	18	9.60	28	43	PFtoP	3.00	287	71	358	No	no	85	118/86	17	83	120/80	19	83	120/80	17	8.6	28	No	no	no
140	Monisha	22	14594	Primi	155	51	82	118/78	18	9.80	29	42	F.D	2.70	289	70	359	No	no	87	120/84	18	84	120/80	20	80	118/80	18	8.8	27	No	no	no

141	Kasthuri	21	14616	Primi	149	50	83	120/80	19	9.80	29	40	S.O	2.65	410	106	516	Y	yes	85	120/78	19	84	120/82	20	79	118/86	19	8.8	28	No	no	no
142	Megala	26	14200	G2P1L1	156	54	81	118/80	17	9.60	28	42	CPD	3.70	287	69	356	No	no	85	118/80	19	85	118/80	19	83	120/80	19	8.6	27	No	N	no
143	Ganhimathy	21	14599	Primi	152	51	82	120/76	17	9.80	28	41	F.D	3.15	286	68	354	No	no	85	120/76	18	83	118/80	18	84	120/80	17	8.8	27	No	no	no
144	Sumathy	25	14689	Primi	151	50	83	118/80	18	10.20	31	42	S.O	2.40	291	70	361	No	no	85	118/76	19	84	120/76	18	82	118/80	18	9	30	No	no	no
145	Srividhya	20	14695	Primi	155	52	82	120/80	17	10.00	30	41	Breech	2.65	289	71	360	No	no	86	120/78	18	86	120/80	19	81	120/80	19	9	29	No	V	no
146	Vanitha	23	14731	Primi	153	51	83	116/78	19	10.20	31	43	F.I	3.20	287	72	359	No	no	86	120/76	18	83	120/80	17	82	118/81	19	9.2	30	No	no	no
147	Hemavathy	21	14743	Primi	154	52	84	118/70	18	9.80	29	44	CPD	2.75	288	65	353	No	no	84	120/86	19	81	118/80	17	84	120/80	19	8.8	27	No	no	no
148	Meena	23	14629	Primi	151	54	81	118/70	17	9.60	28	45	PFtoP	2.83	289	70	359	No	no	84	118/80	17	86	120/80	17	81	120/80	19	8.6	27	No	no	no
149	Megala	24	14533	G2P1L0	153	52	82	118/86	19	9.60	28	40	F.D	2.80	290	72	362	No	no	86	120/80	17	84	120/80	18	82	118/80	18	8.6	27	No	N	no
150	Kavitha	21	14691	Primi	150	51	81	120/80	18	9.60	28	42	F.I	2.90	291	71	362	No	no	85	117/82	19	80	120/82	18	83	118/82	19	8.6	27	No	no	no

CONTROL

S.No	Name	Age	IP.No	Parity	Ht in cms	Wt in Kg	PRE-OPERATIVE					Duration of the LSCS in Min	Indication	Bw Baby	Bllod loss frm Placental dlry to END-Lscs (a)	Bllod loss frm EO Lscs 2 hrs pp (b)	Total B.L. (a)+(b)	Blood Loss More than 500ml	Addnl Urerotonics	POST OPERATIVE VITALS									HP in Gms	PCV in %	MaternalBlood Transfusion	Maternal Complication	APGAR Score <8/10
																				Immedtly after			1 Hr After			2 Hr After								
																				Placental Dlry			Surgery			Surgery								
							PR/Min	BP in mm HS	RR/Min	Hb in gms	PCV in %									PR/Min	BP in mm Hg	RR/Min	PR/Min	BP in mm Hg	RR/Min	PR/Min	BP in mm Hg	RR/Min							
1	Bhagialakshmi	25	1835	Primi	152	53	82	120/80	19	9.60	28	42	CPD	2.84	327	112	439	No	no	86	120/77	18	84	120/78	19	82	120/78	19	8.1	26	no	no	no
2	Pramila	30	1021	G2P1L1	152	53	80	118/78	19	9.80	29	41	CPD	2.85	326	110	436	No	no	85	118/76	19	84	118/86	19	80	118/76	18	8.3	27	no	no	no
3	Pushpa	20	158	Primi	151	53	81	116/78	17	10.00	30	41	F.D	2.80	330	109	439	No	no	84	114/77	19	85	122/77	18	80	116/78	19	8.5	28	no	no	no
4	Durga	26	431	Primi	152	53	82	122/78	18	9.60	28	43	S.O	2.75	328	112	440	No	no	87	120/78	18	85	128/76	17	83	118/86	17	8.1	26	no	N	no
5	Jaya	18	545	Primi	153	51	82	120/80	19	9.60	28	45	F.D	2.82	332	110	442	No	no	86	120/76	18	80	118/86	19	82	120/78	19	8.1	26	no	no	no
6	Vimala	21	85	G2P1L1	152	53	81	110/80	18	9.80	29	42	FI	2.80	328	111	439	No	no	87	118/77	19	84	122/76	17	81	118/86	18	8.3	27	no	no	no
7	Reshma	27	140	Primi	153	51	82	130/78	19	10.00	30	44	F.D	2.78	381	114	495	No	no	86	118/76	18	85	120/82	19	82	128/78	18	8.5	28	no	no	no
8	Elavarasi	20	283	G2P1L1	152	52	80	110/80	19	10.20	31	44	PFtP	2.89	780	180	960	Y	yes	80	120/74	19	84	116/76	18	80	120/82	19	8.0	24	yes	V	no
9	Rajeshwari	22	512	Primi	153	50	81	120/80	18	9.60	28	42	CPD	3.00	330	106	436	No	no	87	120/72	19	84	118/78	19	80	118/76	19	8.5	26	no	no	no
10	Suganya	25	163	Primi	151	53	82	118/78	17	9.80	29	41	F.D	2.65	328	108	436	No	no	84	118/76	18	85	116/76	20	81	126/78	20	8.3	27	no	no	no
11	Manjula	23	95	Primi	152	53	81	121/78	18	10.00	28	42	Breech	2.78	329	110	439	No	no	86	124/84	18	84	120/82	19	82	118/78	16	8.0	26	no	no	no
12	Samabanu	22	45	G2P1L1	151	50	82	118/78	19	9.80	29	41	CPD	2.85	326	112	438	No	no	87	120/76	19	85	120/76	19	80	116/84	19	8.4	27	no	N	no
13	Alia	31	212	Primi	152	52	82	120/80	18	9.60	28	43	F.D	2.78	330	110	440	No	no	85	120/70	19	84	120/82	19	82	120/86	19	8.0	26	no	no	no
14	Yamini	25	376	Primi	153	53	82	118/78	19	9.80	29	44	PFtP	2.83	450	120	570	Y	yes	86	118/74	19	84	110/76	18	82	118/78	18	8.2	27	no	no	no
15	Shalini	24	345	Primi	153	53	85	120/72	18	9.80	29	41	CPD	2.82	328	112	440	No	no	84	118/76	19	85	120/76	17	82	118/78	17	8.1	27	no	no	no
16	Chellathai	20	414	Primi	151	52	81	118/76	19	9.60	28	38	CPD	2.85	329	110	439	No	no	86	120/74	18	84	116/77	19	80	118/86	15	8.1	26	no	no	no
17	Mahadevi	21	421	G2P1L1	152	50	78	120/80	18	9.80	29	42	S.O	2.78	326	112	438	No	no	86	118/78	19	85	128/76	17	83	120/78	19	8.2	27	no	no	no
18	**Manjula**	22	462	Primi	153	52	81	118/76	19	9.60	28	42	F.D	2.85	470	130	600	Y	yes	86	120/70	18	86	118/76	17	82	140/78	20	8.0	25	no	no	no

19	Devipriya	19	508	Primi	152	53	80	120/76	18	9.80	29	43	CPD	2.82	330	111	441	No	no	87	118/76	18	84	120/84	18	82	120/82	19	8.1	27	no	no	no
20	Ramya	26	501	Primi	153	52	81	122/72	18	9.60	28	42	F.I	2.87	331	112	443	No	no	84	120/77	19	80	118/79	19	83	128/78	19	8.1	26	no	no	no
21	Therasa	22	550	Primi	154	51	82	120/80	19	9.60	28	45	F.D	2.85	328	110	438	No	no	89	118/76	19	82	120/82	19	84	120/78	18	8.1	27	nn	N	yes
22	Rani	22	599	G2A1	151	53	83	120/80	17	10.20	31	41	CPD	2.87	331	112	443	No	no	86	120/74	19	85	118/80	19	81	120/79	18	8.7	29	no	no	no
23	Chandrakala	25	604	Primi	150	53	83	118/78	18	10.00	30	42	CPD	2.88	480	125	605	Y	yes	84	110/80	19	83	116/77	19	82	124/86	17	8.5	29	no	V	no
24	Usha	25	666	G2P1L1	151	53	83	120/82	18	10.20	31	42	CPD	2.84	450	110	560	Y	No	84	120/76	18	85	120/86	19	82	128/78	19	8.7	27	no	no	no
25	Samabanu	18	730	Primi	152	52	82	118/78	18	9.80	29	44	F.I	2.78	330	112	442	No	no	86	118/78	18	85	118/84	19	81	124/79	18	8.3	27	no	no	no
26	Deepika	21	803	Primi	153	50	84	120/86	19	9.60	28	42	F.D	2.80	331	110	441	No	no	84	120/76	19	84	120/78	19	82	122/86	19	8.1	26	no	no	no
27	Rihana	28	943	Primi	152	51	83	118/78	17	9.80	29	43	F.D	2.84	328	108	436	No	no	86	118/76	19	85	118/847	18	82	118/78	19	8.3	27	no	no	no
28	Surya	20	978	G2A1	153	53	84	120/82	19	9.60	28	41	CPD	2.78	326	106	432	No	no	84	120/74	18	84	120/77	17	83	120/84	18	8.1	26	no	no	no
29	Sumathi	22	947	Primi	154	53	85	130/78	18	9.80	29	42	F.D	2.78	327	108	435	No	no	86	120/76	19	85	118/77	17	83	122/80	19	8.3	27	no	no	no
30	Mary Jesintha	26	771	Primi	151	50	80	120/80	17	9.60	28	40	S.O	2.60	330	110	440	No	no	84	118/76	19	83	118/84	18	82	119/70	19	8.1	26	no	no	no
31	Lakshmi	23	1043	G2P1L1	153	53	78	126/86	18	9.80	29	40	Breech	3.05	760	180	940	Y	yes	86	120/76	18	85	120/82	19	82	120/80	19	7.9	24	yes	no	no
32	Muthulakshmi	24	1014	G2P1L1	152	52	88	118/78	17	10.00	30	45	PFtP	2.75	328	112	440	No	no	84	118/78	17	82	118/78	19	82	120/78	17	8.6	26	no	no	no
33	**Hemalatha**	27	1093	Primi	154	53	76	120/80	18	10.20	31	42	S.O	2.50	329	110	439	No	no	86	116/76	18	85	120/72	18	81	122/78	18	8.7	29	no	no	no
34	Chandini	20	849	Primi	153	51	82	120/76	19	9.60	28	42	PFtP	3.20	330	111	441	No	no	84	120/80	19	84	118/86	19	80	120/74	19	8.1	26	no	N	no
35	Kalaivani	30	1200	Primi	154	50	83	120/76	19	9.60	28	40	F.D	2.75	328	108	436	No	no	86	121/80	18	85	118/82	18	80	118/70	19	8.1	26	no	no	no
36	Asha	22	1358	Primi	153	50	82	126/72	18	9.80	29	41	CPD	2.90	329	106	435	No	no	84	122/76	19	84	116/76	20	86	116/82	18	8.3	26	no	no	no
37	Tamilselvi	25	1366	G2A1	154	52	81	1187/78	17	9.60	28	41	CPD	2.82	328	110	438	No	no	86	124/80	19	85	120/82	17	78	118/78	19	8.0	27	no	no	no
38	Thenmozhi	21	1395	Primi	153	50	84	120/72	17	9.80	29	42	CPD	2.95	460	120	580	Y	no	84	118/76	18	85	116/86	18	78	120/82	18	8.3	27	no	V	no
39	Prasanna	29	1391	Primi	153	50	81	118/76	18	9.60	28	42	F.D	2.85	330	112	442	No	no	86	120/80	17	84	120/70	19	81	122/86	18	8.1	26	no	no	no
40	Mahalakshmi	`20	1479	Primi	153	53	76	120/84	19	9.80	29	42	F.I	2.80	326	111	437	No	no	84	120/80	17	84	118/84	19	80	124/78	19	8.3	27	no	no	no
41	**Hema lakhmi**	19	1493	G2A1	152	53	85	110/82	17	9.60	28	41	F.D	2.75	328	110	438	No	no	84	120/80	18	85	117/78	18	80	118/80	18	8.1	26	no	no	no
42	Sunitha	21	1160	Primi	153	52	83	110/80	18	9.80	28	42	CPD	2.85	330	106	436	No	no	86	118/76	19	85	116/76	18	81	122/86	19	8.0	26	no	no	no
43	Kalaiarasi	26	1650	Primi	152	53	82	110/76	18	9.60	28	41	F.D	2.84	520	112	632	Y	no	84	118/78	19	84	120/76	17	82	120/80	19	8.1	26	no	no	no
44	Sumathi	22	1783	Primi	153	52	83	120/76	17	9.80	29	41	CPD	2.95	520	140	660	Y	yes	85	120/76	18	84	118/78	18	82	118/78	18	8.1	27	no	N	no

45	Selvi	32	180	G2P1Lo	153	53	82	120/70	18	9.60	28	42	S.O	2.65	328	111	439	No	no	86	118/76	18	85	120/78	19	80	121/82	19	8.2	26	no	no	no
46	Padma	26	1900	G2P1L1	153	53	82	120/76	18	9.60	28	42	F.D	2.85	328	112	440	No	no	86	120/78	19	85	120/84	19	80	120/80	19	8.1	26	no	no	no
47	Sarawathy	19	2052	Primi	152	52	81	120/80	19	9.80	29	41	CPD	3.20	330	108	438	No	no	84	120/86	18	83	118/77	19	82	119/78	19	8.3	27	no	no	no
48	Chitra	20	2076	Primi	152	53	82	110/80	19	9.60	28	44	CPD	3.10	520	120	640	Y	yes	85	120/77	19	84	119/76	18	83	118/78	18	8.1	26	no	V	no
49	Anjali	28	2780	Primi	153	50	83	120/82	18	9.80	29	42	CPD	3.25	326	113	439	No	no	86	118/70	19	85	120/84	19	82	126/86	19	8.3	27	no	no	no
50	Bharani	21	2124	G2P1L1	152	50	84	118/72	19	9.60	28	41	F.D	2.92	328	114	442	No	no	84	118/76	18	84	118/86	17	81	120/80	17	8.1	26	no	no	no
51	Ilakia	29	2295	Primi	153	50	82	120/76	19	9.80	29	42	CPD	2.98	330	105	435	No	no	86	120/76	18	85	120/84	18	81	110/82	19	8.3	27	no	no	no
52	Eshwari	22	2344	Primi	152	50	83	118/76	17	10.00	30	38	PFtP	3.45	331	112	443	No	no	84	118/74	17	83	118/84	19	80	120/78	18	8.5	28	no	no	no
53	Thamina	25	2261	Primi	151	53	82	120/78	18	10.20	31	42	F.D	2.85	328	111	439	No	no	84	120/74	18	82	120/84	18	82	118/78	19	8.7	29	no	no	no
54	Sonu	30	2369	Primi	155	50	83	120/86	19	9.80	29	42	S.O	2.45	440	120	560	Y	no	86	120/76	19	83	118/84	18	83	120/70	17	8.1	27	no	no	no
55	Saranya	23	2504	G2P1L1	150	53	82	118/78	19	9.60	28	41	F.D	2.85	326	110	436	No	no	84	120/76	19	84	128/78	17	82	118/82	17	8.1	26	no	N	no
56	**Thendral**	25	2155	Primi	152	52	83	120/80	18	9.80	29	41	F.I	2.75	380	108	488	No	no	86	118/76	19	85	118/78	17	84	120/82	16	8.0	27	no	no	no
57	Sarala	22	2502	Primi	153	50	81	120/82	17	9.60	28	41	Breech	2.65	327	106	433	No	no	86	120/74	18	83	120/80	19	82	118/78	16	8.2	26	no	no	no
58	Chitra	21	2151	Primi	160	50	78	118/86	18	9.80	29	42	F.D	2.95	326	110	436	No	no	86	118/76	19	84	122/84	18	82	128/80	17	8.0	27	no	no	no
59	Ranjitham	20	2516	Primi	149	52	85	120/86	19	10.00	30	42	F.D	2.85	320	112	432	No	no	84	120/76	18	83	122/86	18	82	120/86	17	8.4	28	no	no	no
60	Meenatchi	21	2618	G2P1L0	152	53	82	118/76	20	10.20	31	41	CPD	2.90	685	185	870	Y	yes	84	120/74	19	84	120/84	19	81	124/86	18	8.0	24	yes	V	no
61	Sundari	20	2310	Primi	153	51	83	120/76	19	10.00	30	41	F.I	2.75	340	110	450	No	no	84	118/76	19	84	126/86	19	82	124/82	19	8.5	28	no	no	no
62	Pallavi	23	2717	Primi	154	53	84	120/82	18	9.80	29	42	F.D	2.90	328	108	436	No	no	86	120/74	18	85	116/84	17	82	120/86	17	8.1	27	no	no	no
63	Jayashree	22	2416	Primi	153	52	81	118/76	17	9.60	28	42	CPD	2.83	330	110	440	No	no	85	120/74	18	85	118/84	18	82	118/78	19	8.3	26	no	no	no
64	Tharani selvi	25	2326	G2P1L1	152	53	80	120/76	17	9.80	29	42	F.D	2.75	329	112	441	No	no	86	118/76	19	84	116/78	18	83	122/86	17	8.1	27	no	no	no
65	Shobana	24	2832	Primi	153	53	78	120/78	18	9.60	28	43	S.O	2.68	328	110	438	No	no	84	120/70	19	84	120/84	19	82	128/78	19	8.1	26	no	no	no
66	Lavanya	29	2895	Primi	153	51	88	118/78	19	9.80	29	40	CPD	2.95	410	110	520	Y	no	86	120/72	18	85	120/84	19	80	120/80	19	8.0	27	no	no	no
67	**Hemavathy**	21	2880	G2P1L1	153	53	78	120/80	19	9.60	28	41	F.I	2.85	329	105	434	No	no	86	118/76	19	84	118/84	19	82	120/78	19	8.1	26	no	V	no
68	Victoria	22	2810	G2A1	153	53	88	120/82	19	9.60	28	42	F.I	2.95	326	106	432	No	no	86	120/76	19	84	124/78	19	82	128/86	19	8.0	26	no	no	no
69	Nandhini	18	3038	Primi	152	52	86	120/78	17	9.80	29	42	F.D	2.55	328	104	432	No	no	85	120/76	19	85	125/76	19	81	124/78	18	8.3	27	no	N	no
70	Tamil elakkia	25	2762	Primi	153	53	80	110/80	18	9.60	28	45	S.O	2.65	560	140	700	Y	yes	84	118/76	18	84	118/84	18	80	119/74	19	8.1	24	yes	N	no

71	Reeta	21	3115	G2P1L1	151	52	78	120/86	18	9.80	29	41	CPD	2.95	330	118	448	No	no	86	120/80	18	84	120/78	18	81	120/84	19	8.3	27	no	no	no
72	Rasool Mariam	27	12719	Primi	154	53	82	120/82	19	9.80	29	44	PFtP	3.23	331	112	443	No	no	84	118/78	19	84	120/80	19	82	118/78	18	8.3	27	no	no	no
73	Saranya	20	12124	Primi	153	53	83	110/80	19	10.20	31	43	PFtP	2.95	330	110	440	No	No	86	114/76	17	85	124/84	19	82	110/82	19	8.7	29	no	no	no
74	Valli	22	12725	Primi	152	52	82	130/80	19	10.00	30	41	F.D	2.90	328	112	440	No	No	84	118/80	19	84	120/76	20	82	120/80	18	8.5	28	no	no	no
75	Sasikala	31	12626	G2P1L0	152	53	84	118/78	17	9.60	28	41	Breech	3.10	420	120	540	Y	no	86	110/70	18	85	120/78	18	83	122/78	19	8.5	26	no	no	no
76	Sangeetha	26	12744	Primi	153	53	81	118/78	18	9.80	29	42	CPD	2.95	331	111	442	No	no	84	116/76	18	84	118/84	19	80	120/741	18	8.1	27	no	no	no
77	Surya	24	12759	Primi	151	53	83	120/80	19	9.60	28	42	F.D	2.75	330	112	442	No	no	86	130/76	19	84	120/78	18	81	122/78	19	8.3	26	no	N	no
78	Amala	23	12635	G2P1L1	152	52	82	120/72	18	9.80	29	41	F.I	3.10	328	110	438	No	no	85	120/76	19	85	118/80	18	80	121/70	19	8.1	27	no	no	no
79	Jayalakshmi	25	12770	Primi	153	53	84	118/78	19	10.20	31	43	CPD	2.85	326	112	438	No	no	86	116/80	19	85	120/80	18	82	120/74	18	8.3	29	no	no	no
80	Gomathi	22	12822	Primi	152	53	82	110/78	18	10.00	30	42	S.O	2.65	321	108	429	No	no	84	110/76	17	82	110/76	19	80	124/787	19	8.7	28	no	no	no
81	Asina	20	12788	Primi	153	52	82	120/76	19	9.60	28	45	F.D	2.75	820	150	970	Y	yes	86	118/80	18	84	118/84	19	82	120/74	19	7.7	24	yes	V	no
82	Ram Shanhari	18	12330	Primi	152	53	83	118/78	19	9.80	29	42	CPD	2.95	330	106	436	No	no	84	118/76	18	85	120/80	19	82	140/82	18	8.4	27	no	no	no
83	Amala	26	12553	Primi	153	51	82	120/80	18	9.60	28	41	F.D	2.85	328	110	438	No	no	86	120/72	19	84	126/78	18	83	122/78	19	8.1	26	no	no	no
84	Anaddhi	21	12780	Primi	154	53	83	120/82	18	9.80	29	44	F.I	2.95	329	112	441	No	no	84	118/76	19	84	124/86	19	80	120/82	19	8.3	27	no	no	no
85	Bharathi	22	12812	Primi	150	50	82	118/78	19	9.60	28	42	CPD	2.85	331	108	439	No	no	86	120/74	19	85	124/78	17	83	118/84	18	8.1	26	no	no	no
86	Ushanandhini	28	12808	G2P1L1	151	51	82	120/80	19	9.80	29	42	Breech	2.90	425	110	535	Y	no	86	118/76	17	83	120/78	17	82	110/82	19	8.3	27	no	no	no
87	Tulasi	25	12893	Primi	152	52	83	120/70	18	9.60	28	41	CPD	2.85	330	112	442	No	no	84	120/80	18	82	118/84	18	83	124/78	17	8.1	26	no	N	no
88	Kavitha	25	12910	G2P1L1	153	53	82	120/76	18	9.80	28	41	FI	2.95	660	140	800	Y	yes	88	120/76	19	84	128/76	18	82	118/78	19	8.0	24	yes	V	no
89	Devi Kala	22	12998	Primi	153	52	83	118/72	19	9.80	29	42	FD	2.95	326	112	438	No	no	86	118/70	18	84	118/77	19	80	120/82	18	8.5	27	no	no	no
90	Dhanalakshmi	28	12811	Primi	153	53	82	120/70	19	9.60	28	45	F.D	2.85	330	108	438	No	no	86	118/70	18	84	118/77	19	80	120/84	18	8.3	27	no	no	no
91	Sangeetha	21	12989	Primi	152	53	80	120/80	18	9.80	29	42	F.D	2.75	331	112	443	No	no	87	120/70	19	85	118/78	17	84	118/78	19	8.1	26	no	no	no
92	Susmitha	26	12681	G2P1L1	153	51	81	118/76	19	9.80	29	43	CPD	2.80	330	110	440	No	no	85	118/76	19	84	128/76	20	80	120/84	17	8.0	27	no	no	no
93	Dharani	20	12982	Primi	152	53	82	120/78	18	9.60	28	41	S.O	2.95	328	112	440	No	no	86	120/74	19	80	118/80	19	84	118/80	17	8.1	27	no	N	no
94	Nanadhini	27	13047	Primi	151	50	84	118/78	19	9.80	29	44	CPD	2.78	329	110	439	No	no	86	118/76	18	84	120/78	19	84	120/74	19	8.1	26	no	no	no
95	Devaki	23	13058	Primi	154	52	78	120/82	19	9.60	28	42	F.D	2.83	328	111	439	No	no	88	120/70	17	85	118/78	19	83	126/80	19	8.2	26	no	no	no
96	Barkavi	29	13063	Primi	153	53	82	120/80	19	9.60	28	43	F.D	2.65	328	108	436	No	no	88	110/86	17	84	120/86	19	83	120/84	19	8.1	26	no	no	no

97	Gomathy	21	13091	Primi	150	50	80	120/98	18	9.80	29	42	PFtP	2.70	326	110	436	No	no	87	120/74	19	85	118/76	18	83	120/82	19	8.3	27	no	no	no
98	Vanaja	22	13110	Primi	151	51	82	118/76	17	9.60	28	44	F.D	2.85	330	108	438	No	no	88	118/76	18	84	120/86	19	80	120/80	19	8.3	26	no	no	no
99	Jaya	23	13024	Primi	152	50	83	120/82	18	10.20	31	40	F.D	2.80	326	110	436	No	no	86	120/74	19	83	118/84	19	80	122/84	19	8.7	28	no	no	no
100	Menaka	20	12686	Primi	154	53	82	118/76	19	10.00	30	41	F.D	2.75	560	120	680	Y	yes	85	118/76	17	84	120/84	19	82	118/80	19	8.5	28	no	V	no
101	Suguna	21	13461	G2P1L1	155	50	82	120/86	18	9.80	29	42	CPD	2.82	440	110	550	Y	no	88	118/78	18	82	118/80	19	83	140/82	19	8.2	26	no	N	no
102	Ramya rani	30	13458	Primi	151	53	83	120/82	18	9.60	28	42	F.I	2.98	328	108	436	No	no	87	120/76	19	84	124/82	19	80	120/78	19	8.1	24	no	no	no
103	Ramya	29	13517	Primi	150	50	84	118/81	17	9.80	29	41	CPD	2.95	329	106	435	No	no	85	118/74	19	85	118/86	17	80	124/82	17	8.2	26	no	no	no
104	Hasina	20	13509	Primi	152	51	80	118/78	19	9.60	28	42	CPD	2.75	328	108	436	No	no	86	116/77	18	84	120/84	18	83	116/70	19	8.2	26	no	no	no
105	Manjula	22	13424	G2P1L1	153	52	81	120/76	19	9.80	29	41	PFtP	2.83	329	110	439	No	no	80	120/70	19	84	120/77	19	80	120/82	17	8.1	27	no	no	no
106	Kumari	26	13523	Primi	152	53	82	120/80	18	9.60	28	42	F.D	2.80	330	112	442	No	no	87	118/76	19	85	118/77	19	81	126/80	19	8.3	26	no	no	no
107	Anitha	23	13554	Primi	153	52	83	118/76	18	9.80	29	42	CPD	2.95	560	180	740	Y	yes	84	120/76	18	84	120/78	18	85	124/78	19	7.8	24	yes	V	no
108	Gayathri	21	12408	Primi	153	50	84	120/72	19	9.60	28	42	F.D	2.90	329	113	442	No	no	86	118/74	19	85	120/78	18	81	120/82	19	8.4	26	no	no	no
109	Kanmani	27	13576	G2P1L1	152	50	83	118/76	18	9.80	29	41	PFtP	3.10	328	111	439	No	no	84	120/70	19	84	118/86	19	80	124/76	18	8.5	27	no	no	no
110	Hemavathy	20	13513	Primi	152	53	82	120/78	19	10.00	30	43	F.D	3.00	330	110	440	No	no	86	118/76	18	83	120/78	19	81	120/82	19	8.7	28	no	no	no
111	Devi	22	13599	Primi	153	52	81	118/78	19	10.20	31	42	CPD	2.90	326	108	434	No	no	85	120/74	19	84	118/78	19	81	119/80	19	8.1	29	no	no	no
112	Taslima	25	13615	primi	152	53	84	120/76	18	9.80	29	41	F.D	2.85	327	106	433	No	no	86	118/76	19	80	110/77	16	83	120/82	17	8.2	27	no	N	no
113	Divya	19	13564	G2P1L0	151	52	83	118/78	19	9.60	28	40	F.I	2.75	330	108	438	No	no	84	120/80	18	84	120/78	19	82	120/86	18	8.1	26	no	no	no
114	Kalavathy	21	13515	Primi	152	50	82	120/76	19	9.80	29	41	Breech	2.85	420	120	540	Y	no	86	118/72	19	83	118/80	19	80	118/70	19	8.2	27	no	N	no
115	Suryakala	26	13624	G2P1L1	151	53	82	120/76	19	9.80	29	42	F.I	2.85	328	112	440	No	no	86	120/76	19	84	120/77	19	80	120/86	19	8.1	25	no	N	no
116	Revathi	21	13909	Primi	152	52	83	120/80	19	9.60	28	42	F.D	2.98	326	110	436	No	no	85	118/76	18	84	124/78	19	83	128/78	18	8.3	26	no	no	no
117	Vasanthi	25	14156	Primi	153	53	82	120/86	17	9.80	29	42	CPD	3.15	565	135	700	Y	yes	80	116/76	19	85	118/77	17	81	116/86	19	8.3	24	no	no	no
118	Karpagam	20	14149	Primi	151	51	81	118/76	18	10.00	30	42	F.D	2.95	330	106	436	No	no	87	118/78	18	84	120/84	18	83	120/74	19	8.5	28	no	no	no
119	Abi Fathima	32	14176	G2P1L1	154	53	85	120/80	19	10.20	31	45	PFtP	2.85	329	108	437	No	no	86	116/70	17	85	118/77	17	81	118/78	18	8.7	29	no	no	no
120	Thilagam	29	14816	Primi	153	53	82	118/78	19	9.80	29	41	F.D	2.75	330	110	440	No	no	84	118/76	18	84	126/76	18	83	116/84	19	8.3	27	no	no	no
121	Jothi akshmi	22	14195	Primi	152	52	83	120/82	18	9.60	28	42	S.O	2.85	440	130	570	Y	yes	86	118/76	19	83	118/78	19	84	118/76	19	8.2	24	no	no	no
122	Janaki	19	14161	Primi	151	53	82	118/76	19	9.80	29	41	Breech	2.80	331	112	443	No	no	87	120/80	19	85	122/84	19	80	120/72	18	8.1	27	no	no	no

123	Janaki	25	14223	G2P1L1	150	53	83	120/80	19	9.60	28	42	F.D	2.75	328	110	438	No	no	84	118/76	18	84	118/80	20	84	118/78	19	8.1	26	no	N	no
124	Poongodi	21	14183	Primi	151	50	82	118/76	18	9.80	29	42	F.D	2.88	330	112	442	No	no	87	120/74	19	84	120/84	16	83	140/82	19	8.1	27	no	no	no
125	Kushboo	26	14260	Primi	153	53	82	120/78	19	9.60	28	41	F.I	2.95	331	111	442	No	no	87	118/76	19	84	124/78	17	84	122/80	18	8.3	26	no	no	no
126	Sundari	23	14211	Primi	154	53	81	118/72	19	10.00	30	43	CPD	3.25	328	108	436	No	no	84	120/80	18	85	122/84	18	83	122/78	17	8.5	28	no	no	no
127	Ammu	24	14251	Primi	153	53	85	120/76	19	10.20	31	42	CPD	3.10	329	106	435	No	no	87	114/78	19	85	118/86	19	82	120/86	18	8.1	29	no	no	no
128	Rohini	29	14280	G2P1L1	152	53	80	118/76	18	9.80	29	43	F.D	3.25	410	110	520	Y	no	80	118/76	18	80	116/78	19	81	122/74	19	8.1	27	no	no	no
129	Gowri	22	14249	Primi	152	52	78	114/80	19	9.60	28	42	F.D	2.55	326	118	444	No	no	78	120/72	19	85	124/86	20	82	124/78	19	8.2	26	no	N	no
130	Indhu	27	14335	Primi	153	53	83	116/80	19	9.80	29	42	Breech	2.75	330	102	432	No	no	86	118/77	19	83	126/76	15	83	122/80	18	8.3	27	no	no	no
131	Shobana	21	14353	G2P1L1	152	51	82	120/76	18	10.20	31	41	F.D	2.85	331	110	441	No	no	84	120/70	19	82	126/78	19	82	122/74	19	8.1	29	no	no	no
132	Kamala	20	14498	Primi	153	53	82	120/80	19	10.00	30	42	CPD	2.95	328	112	440	No	no	84	118/76	18	84	128/80	19	80	120/84	19	8.5	28	no	no	no
133	Mangadevi	29	15505	Primi	154	50	83	130/80	18	9.80	29	41	F.I	2.90	329	110	439	No	no	86	120/76	19	84	124/74	19	80	120/78	18	8.3	27	no	V	no
134	Suvitha	21	14481	G2P1L1	152	52	82	120/80	9	9.60	28	41	S.O	2.75	320	106	426	No	no	86	120/74	19	83	118/86	17	83	122/82	18	8.1	26	no	no	no
135	Dharani	22	14473	Primi	151	53	83	121/80	19	9.60	28	39	CPD	2.85	760	140	900	Y	yes	84	118/77	19	82	118/78	18	83	122/86	19	8.1	24	yes	V	no
136	Hasina	25	16479	G2P1L1	151	52	82	120/80	19	9.80	29	41	Breech	2.80	560	130	690	Y	yes	86	120/74	19	84	120/78	19	84	120/80	19	8.5	27	no	V	no
137	Selvi	21	14582	Primi	154	50	83	118/78	18	9.60	28	42	CPD	2.85	328	112	440	No	no	84	118/74	18	82	118/86	19	80	120/82	18	8.1	26	no	no	no
138	Lakshmi	20	16469	Primi	153	52	82	116/82	19	9.80	29	43	F.D	2.75	329	110	439	No	no	87	116/76	17	84	118/78	18	83	121/86	19	8.3	27	no	no	no
139	Arun Latha	26	14594	Primi	152	51	80	120/80	19	9.60	28	42	S.O	2.65	330	108	438	No	no	85	120/70	19	84	120/78	19	81	118/78	17	8.1	26	no	no	no
140	Lakshmi	34	14475	G2P1L1	151	53	84	120/82	18	9.80	29	39	CPD	3.00	330	106	436	No	no	86	118/74	19	84	118/82	19	80	118/76	19	8.3	27	no	no	no
141	Bharani	22	14597	Primi	152	52	82	118/78	19	10.00	30	42	CPD	2.95	328	110	438	No	no	84	120/72	18	84	120/86	19	83	128/74	19	8.1	28	no	no	no
142	Tamilselvi	27	14607	Primi	152	53	82	120/82	18	10.20	31	41	F.D	2.85	440	130	570	Y	no	86	110/82	19	85	118/76	20	80	118/78	16	8.5	29	no	no	no
143	Govindammal	21	14566	Primi	153	52	83	118/76	19	9.80	29	41	F.D	2.75	326	110	436	No	no	85	118/77	17	84	120/84	19	83	116/84	17	8.7	27	no	no	yes
144	Usha	20	14580	G2P1L1	152	50	82	114/78	19	9.60	28	44	F.D	2.85	327	112	439	No	no	86	120/74	19	84	118/84	20	83	120/82	19	8.3	26	no	no	no
145	Uma	23	14686	Primi	153	52	80	120/82	19	9.80	29	43	Breech	2.83	328	110	438	No	no	88	118/76	19	84	120/70	19	82	121/86	19	8.1	27	no	no	no
146	Muniammal	22	14723	Primi	152	52	78	118/78	19	10.00	30	41	F.D	2.85	326	108	434	No	no	88	120/70	17	84	118/78	19	82	119/82	18	8.3	28	no	no	no
147	Nandhini	24	14740	Primi	151	53	84	120/80	18	10.20	31	42	F.D	2.75	328	110	438	No	no	87	118/74	19	84	120/77	17	81	120/74	18	8.5	29	no	no	no
148	Sangeetha	26	14158	Primi	152	53	76	118/76	20	9.80	29	43	CPD	2.90	327	112	439	No	no	88	118/77	17	82	180/82	18	83	119/76	19	8.7	27	no	no	no

149	Padmavathi	20	14594	G2P1L1	153	52	86	120/72	20	9.60	28	41	F.D	2.85	328	110	438	No	no	86	118/76	19	84	120/78	19	81	118/84	19	8.3	26	no	no	no
150	Prema	21	14742	Primi	152	50	80	112/78	19	9.80	29	42	Breech	3.01	860	160	1,020	Y	yes	87	120/74	19	84	118/76	19	82	120/80	18	7.5	22	yes	V	no

KEY TO MASTER CHART

Ht	:	Height
Wt	:	Weight
PR	:	Pulse Rate
BP	:	Blood Presure
RR	:	Restiratory Rate
HB	:	Haemoglobin
PCV	:	Packed Cell Volume (Haematocrit)
LSCS	:	Lower Segment Caesarean Section
BL	:	Blood Loss
BW	:	Birth Weight
FI	:	Failed Induction
SO	:	Severe Oligaohydramnios
CPD	:	Cephalo Pelvic Disproportion
FD	:	Foetal Distress
PF to P	:	PROM with Failure to Progress
N	:	Nausea
V	:	Vomiting
D	:	Diarrhoea
Pla.Delry	:	Placental Delivery